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ABSTRACT

This paper reports on a study to design, develop, pilot test, evaluate, and assess an online Internet community system during the months May-July, 1997 at Nova Southeastern University-Programs for Higher Education (NSU PHE). The system was used as a prototype for developing and studying techniques for building virtual communities. Project research questions addressed: elements that should be present in an online Internet community system; hardware and software system design issues; evaluating the online Internet community; training issues for faculty, staff, and students; and assessing the online community for effectiveness. The virtual community became available for use online on the World Wide Web on September 1, 1997. The intention of the finished product is to provide PHE with the medium necessary to compete in a rapidly changing higher education marketplace. The other purpose of the PHE web site is to increase customer service and satisfaction. This should lead to higher student retention rates, and increased efficiency of administration functions at PHE. Appendices include: evaluation instrument; systems curriculum design model; case study form; PHE Criteria Review Committee; CIT Review Committee and selected criteria; PHE Virtual Web Community pages; PHE Formative and Summative Committees; qualitative case study data; curriculum and data from evaluation training sessions; and a biographical sketch of author. (Contains 115 references.) (Author/SWC)

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THE DEVELOPMENT, PILOT TEST, ASSESSMENT, AND EVALUATION OF A COMPUTERIZED ONLINE INTERNET COMMUNITY SYSTEM AT PROGRAMS FOR HIGHER EDUCATION

FORT LAUDERDALE, FLORIDA

Diana Sell Watkins

A major applied research project presented to Programs for
Higher Education in partial fulfillment of the
requirements for the degree of
Doctor of Education

Nova Southeastern University

September, 1997

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My husband and I will never forget my doctoral fellowship year at NSU PHE. Those who have stood with us have witnessed personal trials and tribulations, unbelievable family disasters, natural disasters, and new endings and beginnings.

No one goes through an experience like this without friends, mentors, and prayer partners. Our friends have been Dr. Stan Hannah (the pun king of South Florida), Dr. David Remington (alpha geek), Dr. Laura Weisel, and Ada Christie, a true Proverbs 31 "good woman." My mentors have been Dr. Stan Hannah, Dr. Norma Goonen, Dr. Linda Howard, Dr. Laura Weisel, and Dr. Martin Parks. Our prayer partners have been Sylvia Crockett, Dr. Chuck and Georgia Nash, Norman and Karen Hoggard, Dan and Karen Dantzler, and Dr. Dale Jordan.

Perhaps the only person who really knows what I have been through this year aside from my husband is Dr. Jordan. He has "walked a mile in my shoes" before me. To you Dr. Jordan, we dedicate this work, to the Glory of God, and as a testament of your faithfulness. May generations to come call us blessed, because of your faithfulness and example before us.

> "Teach a wise man, and he will be the wiser; teach a good man, and he will learn more. For the reverence and fear of God are basic to all wisdom. Knowing God results in every other kind of understanding. "I, Wisdom, will make the hours of your day more profitable and the years of your life more fruitful." Wisdom is its own reward, and if you scorn her, you hurt only yourself." (*Proverbs 9, 9-12, The Living Bible*).

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Nova Southeastern University in partial fulfillment
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THE DEVELOPMENT, PILOT TEST, ASSESSMENT, AND EVALUATION OF A COMPUTERIZED ONLINE INTERNET COMMUNITY SYSTEM AT PROGRAMS FOR HIGHER EDUCATION FORT LAUDERDALE, FLORIDA

by

Diana Watkins

August, 1997

The purpose of this study was to design, develop, pilot test, evaluate and assess an online Internet community system during the months of May, June, and July, 1997, at NSU PHE. The system was used as a prototype for developing and studying techniques for building virtual communities.

The research questions addressed in this project were (a) Based upon prior completed needs, evaluation, and development studies of the MIS system at FCAE PHE, what elements should an online Internet community system contain? (b) What are appropriate hardware and software system design issues to consider in the design of such an online Internet system? (c) How can the online Internet community system be evaluated for its effectiveness? (d) How can training issues for faculty, staff, and students be addressed in learning to live in this virtual "community"? (e) How can the online Internet community be assessed for its effectiveness?

The virtual community was designed, developed and pilot tested in the first stage of this study. The procedures employed for the development phase were (a) a literature review was conducted, (b) criteria for the virtual community were selected from the literature review, (c) criteria for the virtual community were reviewed by a committee of Programs for Higher Education staff, (d) a survey of the selected criteria was sent to computing and information technology students for review, (e) the virtual community web pages were developed and mounted on a Windows NT server, (f) a formative committee reviewed the developed product, (g) a summative committee reviewed the final web pages after input from the formative committee, (h) a pilot test of the web pages was conducted, and (i) the web pages were released to PHE on July 1, 1997.

A qualitative research case study of the pilot test was conducted in the second stage of this study. The case study assessed the effectiveness of the development product. The procedures followed were (a) the online pilot test generated qualitative data for the case study, and (b) the case study data was evaluated according to a case study format.

Finally, the third stage of this study determined the effectiveness of the development product through evaluation of the virtual community at the summer institute in Fort Lauderdale, Florida. The faculty, staff, students, and stakeholders of the virtual community were trained in the use of the virtual community at the summer institute in Fort Lauderdale, Florida. The procedures followed were (a) the virtual community web pages were put online July 1, 1997, (b) the virtual community web pages were used at the Programs for Higher Education summer institute, and (c) the virtual community web pages were evaluated for effectiveness in 14 student computer lab sessions, 8 faculty computer lab sessions, and 3 general administrative computer lab sessions.

The virtual community became available for use online on the World Wide Web (WWW) September 1, 1997. It is anticipated that the finished product will provide PHE with the medium

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necessary to compete in a rapidly changing higher education marketplace. It is also anticipated that the PHE web site will increase customer service and satisfaction. This should lead to higher student retention rates, and increased efficiency of administrative functions at PHE.

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Chapter 1

INTRODUCTION

Nova Southeastern University (NSU) is located in Broward County, Florida, and is the largest private university in Florida (Losak, 1996, p. 3). The Fischler Center for the Advancement of Education (FCAE) is the graduate school of education at NSU. FCAE consists of six separate graduate schools of education. They are Programs in Education and Technology (PET), Graduate Teacher's Education Program (GTEP), Programs for Higher Education (PHE), Educational Leadership (EdLeaders), Speech-Language Pathology and Life Span Care Administration (LSCA). Enrollment of FCAE graduate students in 1995 was over 6,600 (Losak), which makes FCAE the largest graduate school of education in the United States. FCAE's mission statement includes the following excerpt:

> FCAE is dedicated to the training and continuing support of teachers, administrators, trainers, and others working in education and related helping professions. These practitioners serve as the bridge between the knowledge base in education and the quality of education of their students. The Center hopes to fulfill its commitment to the advancement of education by serving as a resource for practitioners and by supporting them in their self-development (Goldman, 1996, p. v).

Founded in 1964 as Nova University, the main campus in Fort Lauderdale has grown to include 10 academic centers, and countless student cluster locations throughout the world. NSU is recognized as an early pioneer and leader in distance education technologies. NSU's budget for the 1994-1995 fiscal year exceeded $169 million dollars (Losak, 1996, p. 74).

Nature of the Problem

Petrozella (1996, p. 51) conducted an evaluation study of the factors contributing to the Programs for Higher Education (PHE) students' withdrawal during 1994. One of the conclusions of her study is that PHE should offer an Internet-based PHE web site for discussion of students problems and research issues. No such PHE web site exists at this time, although the Minnesota Cluster has pioneered the first local cluster-based web site in 1997. The intention of the web site suggested by Petrozella is to create a virtual "community" to lessen the feeling of disenfranchisement by third year major applied research project (MARP) students and practicum students. The electronic medium used (the Internet) would also reduce turn-around time in the practicum process, allowing students to conduct research in a more timely manner. This theory of "community" is first described by C. Martin (1997, p. 33) in his book The Digital Estate. Petrozella suggests that this provision of "community" would decrease the drop-out rate from PHE as students would not feel disenfranchised during the MARP and practicum process.

In follow-up evaluation and research studies, Watkins (1996a, p. 28; 1996b, p. 56) determines that the FCAE PHE management information system (computer system) was not meeting perceived needs of the users. Specifically, Watkins (1996a; 1996b) corroborates the earlier Petrozella study that MARP and practicum students were not offered support online via the Internet, and there was no community for such an exchange. Watkins (1996a; 1996b) also corroborates that MARP and practicum students did feel the provision of a "community" was important.

At the present time no permanent hardware or software support exists for conducting a pilot test of a virtual "community". A new web server for FCAE was ordered in April, 1997 with delivery slated for early May, 1997. The server is to be the working test site for FCAE web projects, under the supervision and authority of the technology director at FCAE, and appointed webmasters from each FCAE program. The system is expected to be available for live online Internet use during the fall quarter of 1997, following pilot studies.

The Minnesota Cluster of PHE is first to mount a cluster home page. The cluster has given structure to what a possible virtual PHE "community" would look like. No data or initial input is available. The PHE Pensacola Cluster has conducted trials of e-mail as part of a virtual "community" since late 1996. The cluster has not experimented yet with web access because the technology was not available to the cluster. Although there is considerable data available

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on how to build an attractive and effective web site, there are virtually no substantive studies that provide guidelines and activities for building a virtual community.

Purpose of the Project

The purpose of this study was to design, develop, pilot test, evaluate and assess an online Internet community system during the months of May, June, and July, 1997, at NSU PHE. The system will be used as a prototype for developing and studying techniques for building virtual communities.

Background and Significance of the Problem

The personal computer (as a marketable device) was first announced in the pages of Popular Electronics in January, 1975 (Gates, 1996, p. 16). Between 1975 and 1980 the market for personal computers was born. The original revolution in marketing personal computers was begun on a large scale effort by IBM in Boca Raton, Florida, in 1980 (Wallace & Erickson, 1992, p. 142). The interesting fact about the IBM project is that IBM had originally intended that the personal computer be a network station attached to a mainframe (Wallace & Erickson, 1992).

At the present time, no hardware or software support exists for conducting trials of a virtual "community" at FCAE. A new web server for FCAE was ordered in April, 1997 with delivery slated for early May, 1997. The server is to be the working test site for web projects, under the supervision and authority of the technology director at FCAE, and appointed web representatives from each FCAE program. The author and PHE's program professor for Computer and Information Technology are charter members of the group.

A PHE cluster coordinator Internet-based training session was held on the main campus of Nova in March, 1997. Ten cluster coordinators were trained in one computer lab and taught how to access and use e-mail, access the Internet, and were shown how to use the Internet to deliver curriculum. The evaluations of this training session were very positive, and cluster coordinators asked for more training at the summer institute faculty lab.

A PHE online summer institute web page was published in March of 1997. The page gave unlimited access to PHE faculty, students, graduates, and staff for summer institute registration. 285 inquiries were written to the text file for registration. Approximately one half of the inquires were made during normal business hours, and the other half were made during the hours between 5 p.m. and 7 a.m. This would appear to corroborate theories that the Internet removes time and space obstacles in sending and receiving information. Positive comments were left by many stakeholders on the web site that this was a correct move towards the future of distance education at PHE.

In early April, 1997, PHE's program professor for Computing Technology and Information Services, the marketing director of PHE, and the author met to discuss marketing issues. Out of this meeting came the clear direction that marketing was not being addressed in a satisfactory manner for PHE on the Internet, and that the marketing director of PHE wished to alter that situation. A prototype online Internet system was developed and shown to the marketing director. The marketing director gave approval to begin discussion groups and a formative committee for developing the structure and marketing web presence of PHE on the Internet.

In discussions with PHE's associate director for faculty and curriculum development on April 24, 1997, the author and the CIT program professor were queried about online curriculum, online personal student information, and downloading of student curriculum files. It was determined that the associate director for faculty and curriculum development was interested in placing the core curriculum courses online on the Internet. She also was interested in placing student profiles in secure locations on the PHE server which would allow faculty access to confidential student information. The associate director for faculty and curriculum development was also interested in the possibility of students' downloading core curriculum materials via the

Internet. This would replace the paper system of curriculum distributions. She felt the old system was costly in terms of postage, staff salary, and time.

The meetings described to date indicate that PHE's interest in creating a virtual presence on the Internet is growing. If PHE is to be successful in this new endeavor, a virtual community must be created (C. Martin, 1997, p. 34), complete with policies and rules.

Research Questions

The objective of this report was to determine the answers to the following research questions:

1. Based upon prior needs, evaluation, and development studies of the MIS system at FCAE PHE, what elements should an online Internet community system contain?
2. What are appropriate hardware and software system design issues to consider in the design of such an online Internet system?
3. How can the online Internet community system be evaluated for its effectiveness?
4. How can training issues for faculty, staff, and students be addressed in learning to live in this virtual "community"?
5. How can the online Internet community be assessed for its effectiveness?

Definition of Terms

Home page. A home page is the beginning page for an Internet site (default.html).

Internet. The Internet is a huge network of computers communicating with each other.

Virtual Community. A virtual community is an Internet based computer community made up of members with a common social interest or shared geographical interest.

Web site. A web site is all pages on the Internet belonging to one organization.

Webonomics. The study of the production, distribution, and consumption of goods, services, and ideas over the Internet (E. Schwartz, 1997, bookcover).

Chapter 2

REVIEW OF LITERATURE

Overview

To provide a context for theory, and a general overview of technology, a literature review was conducted. Four computer databases were queried for each category listed below.

Virtual Communities

In 1993, the computer visionary Peter Schwartz interviewed the educational theorist, Peter Drucker. Drucker was polled for his views on information access and computers (Schwartz, 1993, p. 1). Drucker feels that knowledge workers and access to information would control the destinies of nations. Knowledge has no centralized location, which allows it to be adapted to electonic media such as virtual communities (Schwatz, 1993, p. 2). One dissenting opinion about virtual communities is expressed in the article Get real. The Internet is not a wholesome place and it is made up of antisocial people who can't relate to real people (Snyder, 1996, p. 92). Snyder feels that virtual communities lack defining characteristics and membership is highly transient. Virtual environments also bring out the worst in people, not the best (Snyder, 1996, p. 93).

An Early Virtual Community Visionary

According to Sorbel (1991, p. 12), H. Rheingold believes that technology has transformed civilization. Rheingold first used the phrase "global community" (Sorbel, 1991, p. 12). Rheingold authored The Virtual Community and was the editor of the Whole Earth Catalog. His association with The Well (discussed later) can be said to be the start of digital communities. The Well stands for the Whole Earth 'Lectronic Link and was composed of community members with strong opinions using an early version of the Internet to communicate with each other electronically. Anthony (1993, p. 301), makes the observation that in the Virtual Community, Rheingold opens the door to political, personal, and social idea exchange. The computer mediated communications (CMC) that Rheingold mentions is described in examples from The Well. Some conferences include group participants interested in parenting, Buddhists, and new digital computer games. Stewart makes the point in reviewing The Virtual Community that the virtual community is used most often for communication (Stewart, 1993, p. 157). People talk with each other. They do not receive information that is broadcast to them (this is referred to as push technology and will be discussed later). We are still human, even if we are all equipped with fast modems and super computers.

Community Rules

C. Martin (1997, p. 34) argues that in virtual communities the audience or "customers" are aggregated differently than in traditional media terms. Normally, customers are grouped according to geographical interests (an example would be the Arkansas Razorbacks football team--of great interest to Arkansas, but unknown elsewhere), or special interests. Computer magazines form a great bulk of the printed media today as more people become interested in their uses and development. The net, C. Martin asserts (1997, p. 35), allows customers to "sift and surf through staggering loads of content, but it actually empowers them to generate content of their own." In other words, because the net is interactive, customers are able to customize their environments to suit them.

This was one of the reasons for the early success of the personal computer (PC). There is no reason to believe that the usage of the Internet will not take the PC to even greater heights of usage and acceptance. In formulating an Internet presence, then, a consideration of how the proposed customers are to be grouped is important. They will not feel an identity with the virtual community if they are not part of a group. Martin makes the further point that to deal with the Internet, companies must unlearn old media tactics (C. Martin, 1997, p. 39). This means that as customers express preference for products interactively on the Internet, companies must react and change their net presence according to customer demand. Martin urges that companies take the launch and learn approach (C. Martin, 1997, p. 42). This approach includes the philosophy that there are no experts in dealing with the Internet. The way that a company becomes adept at handling Internet transactions, is to launch their web presence and then begin to learn. This is, of course, a reversal of the usual patterns of advertising.

The role of community organizer will become "substantial," according to C. Martin (1997, p. 44). As communities decide whether to organize in a virtual interest or virtual geographical community, the organizers of the effort will be akin to current political leaders. The number one reason for organizing virtual communities on the web is to communicate with each other (C. Martin, 1997, p. 45).

Business

Goldman proposes that virtual communities are being constructed in the business world, producing a virtual corporation that is agile (Goldman, 1994, p. 43). An agile corporation is one able to integrate design, manufacture, marketing and support for its products and services into customer centered business processes adapted to sharply lower product development times and costs. According to Goldman, agile companies are the fifth form of the industrial revolution since the middle ages, and represent the birth in business of the virtual company (Goldman, 1994, p. 45). Agile companies do not sell a finished product, but a product in process. The process revolves around customer satisfaction and demand. The quintessential agile company is Microsoft. Microsoft is constantly re-engineering itself to meet customer demand, and re-inventing itself based upon market pressure.

Business users of the Internet have yet to learn that Internet marketing reaches beyond a home page. Business use should include a sense of community reflected by Mercury Center and GolfWeb web sites which prize community more than profit (Petersen, 1996, p. 59). Profit will be an important factor in the future, but these companies are more interested in building a loyal customer base and community at this point. The immediate value is gold-mining for information which comes free now on many web sites with the use of tracking software (Petersen, 1996, p. 59). Companies are realizing they can build databases of customer preference for free.

Hagel and Armstrong (1997, p. 2) make the point that the race belongs to the swift who move from selling products to servicing customers who buy products. Their aphorism, "Speed is God, and time is the devil" (Hagel & Armstrong, 1997, p. 7), communicates the fact that this revolution is occurring now. Tomorrow is too late. This transfer of power is organized through a virtual community the seller establishes for communicating with the customer what the offered services are. Hagel and Armstrong offer managers some guidelines on how to establish virtual communities (Hagel & Armstrong, 1997, p. 217). The steps are: Experience it (the Internet), build a mock funding plan, develop a proposal for senior management, and build a team to develop an entry strategy. Once the strategy and team are in place, the site can be selected for conducting the business.

In Webonomics, E. Schwartz proposes that companies should follow nine general principles of web development for commercial purposes (E. Schwartz, 1997, p. 1):

1. The quality of a customer's web experience at your site is more important than quantity.
2. Companies should put a presence on the web to get results, not exposure.
3. Consumers should be compensated for disclosing data about themselves.
4. Consumers will only shop online for information-rich products.
5. Self-service provides the highest level of customer comfort.
6. Value-based currencies will become the accepted method of payment on the web.
7. Trusted name brands are of even more value on the web.

8. Small companies can compete with large companies on the web.

9. Web sites must continually adapt to a changing market.

Sites

Alpha World is an online information service which delivers real-time 3-D representations of community via the Internet in the form of homes shops, towns, and a village (Desmond, 1995, p. 16). The village has 3-D figures, and chats and discussions are created online by users.

Project Diane is a virtual community net in Tennessee (Shao, 1995, p. 12). Project Diane has the goal of bringing service organizations together to electronically share and distribute resources directly to the community. Services provided include adopt-a-grandparent, library services, senior citizen health advisory, small-business counseling, science and nature lectures, business and medical assistance, and computer software training (Shao, 1995, p. 12). The project includes the use of interactive desktop videoconferencing along with Internet services.

Etritrea, East Africa, is an newly independent state in Africa (Rude, 1996, p. 17). The government is embarking upon a bold experiment with 500 citizens to explore virtual communities, and the country's new found sense of freedom. Communication often is seen on the web sites discussing issues such as religion, women's rights, and constitutional democracy (Rude, 1996, p. 18). Gender equality also is an item of hot debate. Because Etritrea is small, rural and poor, the medium of virtual community is allowing these discussions, whereas in the physical world they would not take place at all.

Infomine is a University of California at Riverside web-based virtual academic library (Mitchell & Mooney, 1996, p. 20). The library has been in existence for two years and is extremely successful because of the excellent technical structure and user interface. The collection of academic references remains unique on the Internet, and is famous for providing high-quality, well-selected, annotated electronic resources (Mitchell & Mooney, 1996, p. 25).

The Palace is a creation of Time-Warner Interactive's Online Ventures division and is a virtual electronic café for socializing. The Palace uses client-server computing (workstations talking to servers) and two dimensional (2-D) multi-user dimensions (MUD's) to imitate reality.

Moving to rural communities is made easier by the existence of virtual communities (Basch, 1996, p. 37). Experienced consumers report that the experience in virtual community land depends upon the quality of Internet services provided by rural Internet service providers (ISP's). Bandwidth may be lower, local dial-up connections may not be present, and power may not be consistent. However, this life which is described as "beyond the node barrier" is becoming less distinct from well-serviced, high-bandwidth metropolitan areas. It is possible to move to rural areas and maintain a high-speed metropolitan life.

MultiMedia Magic's Cybertown web site lets visitors create a part of a virtual community live online (Wilson, 1996, p. 143). Cybertown has districts, buildings, a government, a newspaper, and chat spaces. Visitors are assigned virtual apartment numbers for living in the town (Wilson, 1996, p. 143).

The WorldVillage web site is another pioneering virtual community (Rankin, 1996, p. 60). The community is a Internet-based BBS, online magazine, and web site rolled into one. It was created for profit in 1994 and had the goal of providing a good family-orientated site that focused on the types of games, education, and multimedia products that a family would look for (Rankin, 1996, p. 60).

Webstock '96 is a huge virtual community effort which gathers proceeds for Do Something, a virtual community grass-roots organization (Bonzai, 1996, p. 62). The goal of Webstock '96 is to bring together hundreds of organizations across the country that are concerned with building community (Bonzai, 1996, p. 63). To the organizers, community equates with sharing ideas, and inspirational values.

World Community College (WCC) is a college of the future which is developing links to business, civic organization, communities, and the world (King, Koller, & Eskow, 1996, p. 32). The college is a consortium that offers services through a virtual campus. Classrooms, libraries, student services, financial aid, faculty offices, lecture halls, lounges, and other services are offered. The college uses America On Line to provide telecomputing services and classes to students.

A living laboratory set up by AT&T in Celebration, Florida, goes a step further (Anthes, 1997, p. 1). The laboratory is in each home of each participant. A PC dials up AT&T and transmits records each day of activities in each participant's home. This includes information gathered from the PC, the fax machine, the telephone, cellular phone, and the pagers during the previous 24 hours (Anthes, 1997, p. 1). The laboratory is made up of 300 families living in Celebration, Florida, next to DisneyWorld. The entire community is wired to this PC laboratory.

The African-American virtual community has discovered that the Internet is color-blind and bigot-free (Corbett, 1997, p. 22). The virtual community, however, reflects physical communities in that the African American community is fragmented. This particular community does not have a sense of depth of content, technological sophistication, or the warmth of real communication.

The town of Blacksburg, Virginia; Bell Atlantic; and a university founded the Blacksburg Electronic Village (BEV) in 1992 (Blumenstyk, 1997, p. A25). BEV encompasses a unique range of services in a physical community. Available are such services as community discussions, health care, arts, entertainment, advertising, and a virtual mall. The college town has a population of 35,000 and boasts a computer usage rate of 80 percent (Blumenstyk, 1997,

p. A24). The university helped fund the experiment to get an early look at how technology might affect changes in normal life patterns.

At least 10 substantial, research related projects are being conducted in BEV, and 40 faculty members and graduate students are involved (Blumenstyk, 1997, p. A25). Senior citizens are an active component of the community, receiving services via the Internet. A criticism of the project is that Virginia Tech has not reached out to the citizenry as a whole. Only current computer users feel comfortable with the technology. Also, initial research by A. Plunkett indicates that literacy be it electronic (byte based) or paper-based (atom-based), must be delivered at the level rural, poor communities are familiar with (Blumenstyk, 1997, p. A25).

The Well is often cited as the first virtual community (Hafner, 1997, p. 100). The Well was the first electronic community which used common communication means such as e-mail, chats, and discussion groups. The sense of community which The Well brought to the pioneering efforts of early electronic communities is still observable at The Well web site. Such common electronic cultural terms as flame, forums, and conferences had their birth in The Well (Hafner, 1997, p. 142). The Well was born in March of 1985, in the corporate offices of The Whole Earth Catalog, in Sausalito, California (Hafner, 1997, p. 106).

Early adopters of the technology whizzed along the information highway at 1200 BPS (a very slow modem speed for exchanging data back and forth), using a text editor (Hafner, 1997, p. 106). The concept which seemed to unite the fledgling community was the sense of membership in a group which accepted all people unseen, and unjudged.

Some technical experts feel the ultimate death of The Well was caused by America On Line and other popular, picture based Internet sites. The Well was not an early adopter of such picture based interfaces as AOL, Microsoft Explorer, and Netscape. This left it unable to compete with superior software technology. This lack of agility is what will cause some web sites to fail. They do not respond to customer demand for change to meet needs.

Tikki Island is a virtual community invented by MTV and run by Online Technologies (Nerney, 1997, p. 39). The company has plans in 1997 for launching new software which enables web sites to host Internet-based discussions from multiple users simultaneously. This is similar to Microsoft's new web based NetMeeting collaborative software product

Parents

Parents are realizing they can build a sense of community on the Internet with other parents via web sites which share parenting information (Littlefield, 1996, p. 36). Experienced parents offer advice and suggestion to parents of disabled children and younger parents. Such novelties as virtual photo albums, newsgroups, and mailing lists have developed from association with this community (Littlefield, 1996, p. 36).

The Family Education Network went online in 1996, as a service to readers of Exceptional Parent (Cisneros, 1996, p. 58). The purpose of this virtual community is to share information with readers, become a source of information for parents, and teach parents how to become advocates for their children. Chats and discussion groups are offered, along with online purchasing services.

Sociology and Psychology of Virtual Communities

Wellman, Salaff, Dimitrova, and Garton (1996, p. 213) study computer networks as social networks. These are referred to as computer supported social networks (CSSN's). They are the base of virtual communities. CSSN's provide social support in specialized and broadly based relationships (Wellman, et al., 1996, p. 213). They accomplish a wide variety of work connecting workers to home organizations. CSSN's have their own norms and structures, and both constrain and facilitate social control (Wellman, et al., 1996, p. 213).

CSSN's are the glue that foster global connectivity, the fragmentation of solidarity's, the de-emphasis of local organizations and the increased importance of home computer bases. In studying CSSN's, the emphasis is on shared interests rather than social characteristics as the unifying factor. The use of linked information on the Internet lends itself well to constructivism, a form of self-discovery learning (McKnight, Dillon & Richardson, 1993, p. 20). Important points are to provide social learning experiences, and ownership of the process. Virtual communities provide membership, belonging, and shared interests. They provide "community" for people seperated by time and distance.

Adult Education Theory and Practice

The quest for lifelong learning has grown from including young people over the age of 17, to include elderly retirees 65 and older (Miller, 1997, p. 20). Elderly retirees usually take classes for personal and social reasons, but younger workers take classes for job-related reasons. Adults are intrinsically motivated to learn if they feel successful in the experience (Johnson, 1996, p. 16). The conditions which must exist are:

1. The adult must want to learn and it is his choice (success and volition), and
2. The subject must be meaningful and worthwhile (value and enjoyment).

The instructor must involve the following conditions, especially in a technical subject where computer phobia is involved (Johnson, 1996, p. 17). The instructor must also be technically competent and able to convey precisely technical subjects.

1. The teacher must show empathy. The teacher must be aware why the students are taking the class and be aware that adults learn in response to their needs.
2. The teacher must show enthusiasm. The Greek equivalent of this word means to be inspired or possessed by a god. The teacher must show passion and outward emotion, energy, and animation.
3. The teacher must be clear in transferring curriculum to adult learners.

Adult learners are self-directed, but they must also be taught by a teacher who gives guidance and structure to the learning experience. Learning is a joyous experience, which is too often relegated to the role of boring drudgery. Adults also have other demands upon their lives and cannot devote practice time or study time to their lessons. They already play too many other roles in their lives.

Greenfield, Tellman, and Brin (1996, p. 22) point out that the teacher must be well-prepared in a technical situation. A model teaching session includes learning objectives, considers the physical facility, sets the computer lab up before hand, plans the course to be short, and allows for hands-on computer lab training time.

The Open University in the United Kingdom takes the approach that faculty can be taught to develop their own curriculum with tools such as Access, Excel, and Word (Hobby, 1996, p. 32). A team of two systems analysts turned a faculty of 200 members into amateur systems developers in a short time period. Faculty were taught basic analysis skills along with exposure to CASE software tools and other development skills. The project has been so successful that other skills will be taught. This approach is sensible in that the faculty (who are adult learners in this situation) are given control over their environment, and are intrinsically motivated by their buy-in to the development process.

Rose (1994, p. 53) proposes that adult students should be given a bill of rights as part of a process called Adult Education Paradigm (AEP). Eight guidelines are set out which guide curriculum development. The student bill of rights includes the knowledge that each student has a valuable base of knowledge. Each student has something to contribute to the class, and each student has their own agenda (reasons) for the class. Each student has the right to a fair chance to succeed. The instructor should be prepared with a variety of instructional techniques.

The student should be approached with a customer satisfaction attitude in the course. This two step approach includes finding out what the student wants and then delivering it to them (Rose, 1994, p. 55). The student has a right to expect a computer lab which reflects the real world, and the right to be informed of prerequisites. The student must take responsibility for their own learning (Rose, 1994, p. 56) and have a part in determining the schedule. They should practice newly acquired skills and be evaluated fairly. One approach to this involves a team approach, where all decisions are made as a team. The objectives for the day are set out, and the class decides how much time to spend on side issues (Rose, 1994, p. 57). The instructor can use three techniques to help teach classes. They are (Rose, 1994, p. 55):

1. Know what knowledge base students come to class with,
2. Individualize instruction based upon skill levels in the class, and
3. Prepare the class with great care and planning.

Mercer University offers a master's in technical communication management via the Internet (Leonard, 1996, p. 388). This is a graduate course using distance learning technology to deliver curriculum. The course includes a home page which provides students with a course syllabus, lectures, outlines, assignments, and requirements. The course also utilizes a listserv for announcements, and technical support. All student research projects are submitted electronically and posted to the home page.

Mercer subscribes to the classical educational philosophies of Jerome Bruner (Leonard, 1996, p. 388). This means that Mercer focuses on discovery learning which is a form of hypothetical teaching. Hypothetical teaching includes an active student role and as such engages the student more fully. Students are motivated intrinsically to learn, which drives discovery learning. Because they control their own learning, they establish ownership over what they learn (Leonard, 1996, p. 389). Discovery learning is also referred to as inquiry learning. Inquiry learning models are similar to models of how the Internet works, which allows the web and inquiry learning to meld together very well.

Distance learning involves a teacher and student who are separated by space and time, a shift in volitional control from the teacher to the student, and noncontiguous interactive communication between teachers and students through the use of electronic media (Leonard, 1996, p. 389). Distance learning also involves the notion of interactive, computer-based applications which are not bound by either time or space constraints (Leonard, 1996, p. 389). Examples of exploratory learning are Internet computer programs which are found in abundance on the Internet. Exploratory learning is very similar to Bruner's Hypothetical Instructional Model C (Leonard, 1996, p. 389). The general core elements used at Mercer to teach distance education classes are the instructor, the student, technological support, and the administration. Without a commitment from technological support staff, and the backing of administration, the Mercer program would not function. The students work with a basic outline of assignments, research topics, and activities they must complete. The teacher acts more as a coach or referee.

While there is not much agreement on what teaching the Internet means, Brandt points out that teaching the Internet means involving more than one discrete set of knowledge (Brandt, 1995, p. 34). Four domains are required: knowledge of the Internet, knowledge of information seeking skills, knowledge of subject area, and knowledge of problem-solving skills.

Computer Phobia

Computer phobia is the feeling of intimidation by rapidly multiplying and mutating technologies (Anonymous, 1995, p. 10). Studies usually claim that computer phobia is gender specific. But according to Marketing Computers equal percentages of men and women described themselves as explorers in the use of technology. Surveys found it was education and not gender that correlated with fear or hostility towards computers. 42 percent of survey respondees with a high school education or less were described as computer phobic, while 9 percent of college graduates described themselves as phobic (Anonymous, 1995, p. 8).

A topic not often discussed in education is the cyberphobia of instructors. George, Sleeth, & Pearce (1996, p. 604) discuss technology aversion in instructors, personality types, and ways to overcome resistance to technology in the classroom. Dell computers found that 55 percent of the general population harbors fear of some form of technology (George, Sleeth, & Pearce, 1996, p. 604). In their classification system, they recognize the following:

1. Negative symbolism in technological change. This involves the cyberphobic as seeing themselves as incompetent, rationalizing that new technology is not necessary, and feeling deskilled by the new technology order.
2. Technological change is often a precursor for signs of discomfort, isolation, job failure, and loss of status or power.
3. Manifested resistance is caused by underlying perceptions of technology which are often not true. These perceptions include sensing loss of control, insecurity, work overload, altered status, learning unwanted new skills, financial loss, and resisting new order. Resistance usually stops short of rejection, and is easily overcome.
4. People fail to recognize stages of change and acceptance. Stages of change and acceptance include identifying the need for change; unfreezing the old order; learning the new order, and refreezing the new order.
5. Failure of implementation may result from deficient execution. The planning may not involve adequate implementation steps.
6. Not identifying the varying levels of technological expertise which are the novice, the skeptic and agnostic, the explorer and optimist, and the conformist and the squatter.

Advice given for adult learners trying to overcome computer phobia includes the following list of suggestions.

1. Do not assume you have to navigate the Internet like an expert. Take a step by step approach.

2. Give yourself time to learn. Schedule time each day on your calendar.
3. Give yourself permission to experiment and make mistakes.
4. Learn by doing. Use new technologies to accomplish familiar tasks.
5. Learn from different sources.
6. Find a computer guru to guide you and give you advice.
7. Join users at your work or community.
8. Stay abreast of new technology skills.
9. Sit far back from your monitor to avoid fatigue.
10. Turn your monitor off when you are not using it.

Adult education principles hold true for the Internet, as in any other field of education. The Internet is capable of delivering education anywhere, anytime, to adults.

Marketing

Overview

Many early adopters of the Internet were driven by faith as they strove to determine methods for gleaning customer information (Callaway, 1997, p. 21). Many firms that will commercially succeed using the Internet have found ways to deliver online data to customers.

The web has a total customer market of 34 million users (and growing) who can receive instantly full-color graphical literature about your company, service organization, or charity (Ey, 1997a, p. 13). The general demographics of web users are young, wealthy, highly educated adults with disposable income to spend. Last year's estimates of income from the web topped $300 million dollars and will grow as companies discover how to use the web to generate income (Ey, 1997a, p. 13).

General Advertising Factors in Virtual Marketing

Speed means everything to customers who access the Internet (Ey, 1997b, p. 10). The race is on to provide the fastest, slickest, attractive web sites. Some Internet providers are considering moving from ISDN and fiber optic cable to Asynchronous Digital Subscriber Line (ADSL). This technology works on standard copper telephone cable and means new wiring would not have to be placed in homes. If speed could be increased and price decreased, the market of the Internet would increase exponentially. This is by adding groups of new customers monthly.

Web sites are subject to normal advertising laws. This means that each site has approximately one to three seconds to attract and hold a customer's attention (R. Henry, personal communication, Stone & Ward Advertising, May, 1997). The medium can be more costly to start up as advertisers convert pen and ink based advertising systems to computer graphics and web pages. Advertisers normally judge market share by the Nielsen ratings for market areas in the country (R. Henry, personal communication, Stone & Ward Advertising, May, 1997). Since this is impossible with web technology, one way to judge advertising effectiveness is to install auditing tools such as Microsoft's Market Focus, which is imbedded in Internet Information Server and the BackOffice Suite (Gibson, 1997, p. 114). This technology allows an ad agency to determine how effective advertising is for a client, and make adjustments based upon auditing reports.

Some Internet providers are considering changing how users pay for surfing the Internet. AT&T, MCI, and other major providers are considering usage-based pricing, similar to phone bill schemes (Gurley, & Martin, 1997, p. 152-154). This means that users would pay by the minutes for Internet data calls, long distance and local calls, and fax and cellular calls.

Other schemes being considered have to do with billboard space rented to advertisers on each Internet provider site (Simons, 1997, p. 49). This is similar to programs which show information now on Microsoft's home page. The difference is that the provider would rent the space to local advertisers in a sort of virtual billboard arrangement. Each viewer would see ads from advertisers in the billboards space.

Push Technology

Push technology is the notion that products can be pushed from the sender to the customer unsolicited via the Internet (Balderston, 1997, p. 41). This is a reversal of the current model of how the web works (Rogers, 1997, p. 35). An example would be an upgrade of software automatically via the Internet from the vendor to the customer. The customer would pay a subscription fee for the service, and would be freed from record-keeping chores. The vendor would be assured of a regular, steady income not subject to cyclical or business cycles. Another example of push technology is the application by Federal Express of push technology to customer queries regarding shipments (Babcock, 1997, p. 113). In the current model, Federal Express allows customers to retrieve online shipping records. In the push technology model, the records on both ends (customer and shipper) would be updated automatically with no user intervention. Unfortunately, the cost of the servers and software that accomplish this feat is well over $100,000.00. Push technology will be used initially by large corporate customers. As prices drop, smaller business customers will be able to take advantage of this new technology.

The legal implications of push technology are very interesting in that customers do not realize currently that information is being collected now before laws are enabled to control such behavior (Galkin, 1997, p. 10). Individual privacy will be explored further as test cases come to trial regarding push technology, and other programs which write files to user's machines and are retrieved by the Internet at later dates in follow-up visits. As always, the old maxim caveat emptor or "buyer beware" still holds true. The Internet is sometimes compared to the wild, wild west because there are no rules.

Customer Service on the Internet

The Internet provides companies with unique opportunities of discovering preferences (Ubois, 1997, p. 40). Ways to capture customer information could be e-mail, discussion groups, and home pages. Customer service provided directly on the web cuts down on turn-around time and bolsters customer satisfaction (Ubois, 1997. P. 40). Another way to maintain customer service is to provide a frequently asked questions (FAQ) section on the home page. This allows a site for customers to see what other people ask, and to leave comments if their concerns are not addressed. Searchable databases and chat groups also help create user identity and virtual community. Companies must also make the leap from building brochures and flyers to building applications on the Internet. Including help desk reference also helps increase customer satisfaction. Push technology is apparently useful in helping customers answer their own questions (consider again the Federal Express shipping example).

Web sites also increase customer communication thereby increasing customer satisfaction (Houser, 1997, p. 25). E-mail links to company administrators who answer their e-mail increases customer satisfaction a great deal. Chrysler uses innovative customer satisfaction technology it refers to as configurator software (Knowles, 1997, p. 68). These are computers located in car dealerships which allow customers to design cars they wish to see. The design is virtual, and the car need not be ordered or delivered. By using this technology, Chrysler is able to determine what actual customer desires and preferences are over time in showroom locations across the country. The system is ready for placement on the web and will gather even more information for Chrysler. Personal Communications Services (PCS) can be monitored for personal preferences also giving vendors valuable customer information (Kagan, 1997, p. 34). PCS is able to track local, long distance, wireless, and cellular communications for changes in buying patterns.

In summary, the marketing industry view is that the Internet will replace Nielsen ratings in determining what customers' preferences are in any market share area. This not only determines the effectiveness of an advertising agencies' campaigns, but determines the prices for advertising via these media in given time periods.

Development Research Methodology

The development research methodology seeks to develop an educational product which meets an existing need. Development methodology generally follows a series of steps or procedures to generate the desired and needed product (Gibney, 1994, p. 16). In development methodology, accepted procedures are to establish criteria for determining what the product should teach, validate the content of the criteria, produce the product under the guidance of a formative committee, validate the finished product through the use of a summative committee, pilot test the product, and make adjustments to the product before general distribution.

Criteria

Other than general marketing criteria which have already been discussed earlier, no general specific criteria were discovered in the literature review for developing an effective web site in an academic environment. The closest similar situation is research completed by Watkins (1996b, p. 2) at Nova Southeastern University. Watkins developed a set of criteria for evaluating a management information system (MIS) by using groups of employees and faculty at Nova Southeastern University (NSU). The groups met informally several times during a month long period at NSU. Each group was asked to determine what services an effective MIS system should deliver to customers. From a consensus of the group meetings, a list of 23 criteria was developed. The study then went on to develop and distribute to stakeholders a needs assessment survey from the list of 23 questions. Returned surveys were tabulated, and average mean scores were reported for both the truth and the importance of each of the 23 statements made. The study was found to have statistical significance in a follow-up assessment of the effectiveness of the MIS system at NSU (Watkins, 1996b, p. 2). Other schools of education at NSU were surveyed in a similar manner and each study was statistically significant in comparison to the original NSU study.

Pilot Tests

With the exception of Watkins (1997), there is almost no information in the literature about pilot tests of academic web pages. There is, however, some information on the pilot tests of web pages in business and industry. Some useful lessons may be learned.

In a pilot test of an intranet (Sykes, 1997, p. 66), Citibank found that employees liked the medium initially. However, the demand for services became so high because of user customization, that roll-out of the product had to be incremental because of the worldwide size of the company. The pilot was such a success, in other words, that the company had to scale down implementation plans, because it was overwhelmed by demand for the product. Planning had not considered this possibility.

Pickering, 1994, p. 16 reports that McCaw Cellular Communications pilot tested a new Cellular Digital Packet Data (CDPD) wireless service in 105 test markets. The tests were not considered a success. However, the company went ahead with plans for providing these services at the end of 1994. Initial glitches were apparently not caused by telephone hardware, but bugs in the software which managed the system. Early adopters of the CDPD system were to have been American Airlines, Federal Express Corporation, and Price Waterhouse. Early would-be adopters were discouraged by the poor pilot test results.

Asynchronous transfer mode (ATM) was pilot tested in early 1994 (Csenger, 1994, p. 1). Results reported by users included lost data because of inadequate hardware systems for transmitting data. Poor planning did not allow for the heavy demand upon the system.

In 1994, the United State Government began pilot tests of what are called "kiosks" for dissemination of information to the general public (Jones, 1994, p. S6). The tests involved four agencies initially (U. S. Post Office, Social Security Administration, IRS, and the VA) and were supposed to simplify information dispersal to the general public through the use of kiosks in malls, public officers, and other general meeting places. Given that the author has never seen one of these kiosks, it is safe to assume the pilot tests did not go as planned. Otherwise, the kiosks would proliferate as ATM's do.

Also in 1994, the Social Security Administration (SSA) was criticized for a proposed computer system conversion from a mainframe to a client server architecture which was not well thought out (Anthes, 1994, p. 82). The United States Office of Technology Assessment felt the proposed conversion was insufficient to produce significant benefits. No pilot tests had been planned, and the Office of Technology Assessment felt that the SSA should conduct tests for delivering services as social security, Medicaid, and food stamps from a single electronic smart card. Plans were still in process to deliver these services over a closed network, instead of over the Internet as a huge peer to peer network.

IBM had its own problems when it undertook global testing of Notes 3.0 on its online information service (Rooney, 1995, p. 112). The system was supposed to integrate workgroup's computing, e-mail and internet services into one online commercial service. The problems appeared to be because of an insufficient software design for such a large volume of data trafficking worldwide. The poor results of the trails had thrown the commercial viability of the software suite into question on the global market.

In 1995, Time Warner, Tele-communcations Inc., and Comcast Corporation all placed orders with Motorola for 350,000 cable modems to pilot test delivery of data transmission via cable wires into homes. The results from the pilot tests indicated that early adopters were so pleased with the speed of cable modems that they did not want to return to standard phone lines, which are at least 1,000 times faster than current analog telephone lines allow. In this case, the pilot tests were considered very successful, but it has not been well-proven in industry trade markets that cable modems are the accepted method of delivering necessary bandwidth for Internet access to homes. It is possible that the three companies did not research well enough current technology trends and wasted money on a possible dead-end.

Early problems also were reported to involve interference from lightning and appliances. Data transmission and data reception speeds also differ, with reception speeds toping 20 MBPS (very fast transmission speeds), and data transmission speed limited to 128Kbps (fairly slow transmission speeds).

World Bank reported in 1995 (Heichler, 1995, p. 12) that its planned conversion to groupware had sparked user resistance. Ten thousand users were to be upgraded simultaneously, but such resistance emerged that the bank divided users into four groups, provided training first, and involved line mangers in the major technological shift.

Microsoft took the approach of training young users at an age when they would first begin to enter the job market, to equip them with immediately salable job skills, and provide a growing base of consultant support for new software (Anonymous, 1996, p. 16). The group of certification tests that make up the Microsoft Certified Professional exams are only passed by approximately 35 percent of enrollees. Microsoft attempted to start a new pilot project in Jackson Hole, Wyoming, for training selected high schools students early in their careers to meet competency requirements for the tests. Of the nine early enrollees, two have graduated and secured data processing jobs in the area. One is working part-time in MIS to pay for college. Seven other schools in the area have enrolled in the early adopter certification process.

Consumers Car Club and AT&T teamed together in 1996 to pilot test a new web site which tied commercial sites to calling services (Davey, 1996, p. 1). This technology is referred to in the industry as "push pages" and allows companies to provide specialized tailored information for consumers online. Consumers Car Club is an intermediary between 1,600 car dealers and customers who do not want to haggle over prices on car lots. While the car club representatives and the consumer are online via the web, phone lines deliver specialized information to the customer. The software allows tracking of customer FAQ's and the web sites are revised to reflect this information. Push technology at this point required two phone lines or one ISDN line: one line for the Internet connection and another line to receive the phone call. Initial user response was good, with the company planning to expand the push pages from seven sites to perhaps twelve.

Smart cards are bringing a whole new meaning to pilot tests on the Internet. A smart card is a cryptography-enabled card similar to a bank ATM card, which accesses restricted areas and generates digital signatures with public-key encryption for banks, record storehouses, and so forth (Roberts, 1997, p. 14). Smart cards are common in Europe and Asia, but have not gained wide acceptance in the United States because they require additional readers for decoding information. The cards also would allow the authentication of signatures on electronic documents. Several pilots of smart cards are being conducted by HP, VeriSign, Entrust, Netscape, Microsoft, Schlumberger, and others (Roberts, 1997, p. 14). Computer manufacturers will need to ship keyboards with "swipe holders" and Americans will have to switch from ATM machines to personal computers before this technology gains widely accepted market share. That is predicted to take ten years in America (Roberts, 1997, p. 15).

Watkins (1997, p. 1) undertook the pilot test of an academic web page at Nova Southeastern University in 1997. The web page was a pilot test of an online registration system. The test was developed from two prior studies at NSU (Watkins, 1996a; and 1996b). As of May 5, 1997, 285 attendees for the summer institute had registered. The pilot test went fairly smoothly after an incompatibility between browsers was discovered and the web page was reprogrammed with a different web address (uniform resource locator, or URL). There had been no major complaints or customer dissatisfaction with the system. The site generated data which printed name badges, attendance sheets, and class lists for specialties attending the summer institute.

The Telecommunications Act and Legal Issues

The United States Congress enacted the telecommunications act in 1996 and set rules for the act in early 1997 (Currid, 1996, p. 55). The bill affects the Internet because it removes 60 years of non-competitive restrictions on baby bells and other communications companies. It is projected that the enactment of the bill will clear the way for a turf war between Internet service providers (ISP's) and phone companies for dominance of the Information Superhighway. The bill also clears the way for new services such as cable companies delivering phone services, data transmissions, and file transfers. The war between cable modems and integrated services digital network (ISDN) lines provided by phone companies is only now heating up. No one in the PC industry claims to have a crystal ball for predicting the outcome of this strange war.

Legal issues discussed by McCloy (1997, p. 19) and T. Martin (1997, p. 13) point out that with new opportunity on the Internet, come new troubles. Companies can perhaps be sued in states where they have no physical presence but deliver an Internet online presence. Companies can be sued for infringement upon another company's domain name (AltaVista by Digital Equipment Corporation, and AltaVista by a private computer owner). Censorship of the Internet has not been determined yet, although it is widely held in the computer industry that the Federal Communications Commission (FCC) will eventually control Internet transactions as it does citizens band radio waves now. The Federal Dilution Act which was intended to protect famous trademarks from disparagement has been used in test cases by Hasbro (the toymaker of Candyland fame) to challenge a sexually explicit Internet site named candyland.com (T. Martin, 1997, p. 15). It is recommended now that companies have their web sites reviewed by internal legal counsel before publishing them on the Internet.

The federal government has been roundly criticized for failing to enforce security in many sensitive government systems linked to the Internet (Anthes, 1996a, p. 73). Three broad areas of vulnerability include software and hardware weakness, human weakness, and lack of security culture or an awareness among users about the need for security. Four percent of intrusions are detected. 27 percent of the intrusions are reported (Anthes, 1996a, p. 74).

Evaluation Research Methodology Studies

The evaluation research methodology seeks to assess the value, merit, or worth of a program, practice, activity, product, or process when compared with pre-established criteria (Varcoe, 1994, p. 6). Often surveys are conducted of customers or clients to determine their level of satisfaction with products or services. Again, to determine what the criteria for surveying stakeholders should be, it is common to group customers together and ask them what is important about a product or service. These criteria can then be validated by a committee which reviews the criteria for validity. When a survey is written from the validated criteria, it is usually sent out to customers or clients and data gathered from returned surveys is tabulated for results. Surveyors are usually concerned with statistical sampling methods, populations from which to take samples, and random methods of selection for identifying samples. No needs assessments or surveys of clients about academic computer systems were located with the exception of Watkins (1996a, & 1996b). This search included four computer research databases, and the NSU database of practicums and dissertations. Business models of needs assessment may serve to provide useful insights in substitution.

Needs Assessment Studies

CompuServe is a giant digital information service provider (Savoia, 1994, p. 18). In early 1992 the provider conducted a needs assessment of its New Information Service Architecture (NISA) to determine what software and hardware requirement the NISA required. A prototype was designed and tested. The management team began by meeting to determine a possible schedule for implementation. Needs assessment discussions were held company-wide to determine what the critical specification for the new NISA should be. Three stages of requirements were determined to be correct: e-mail system requirements, later project requirements, and new technologies requirements.

CompuServe followed a real-world design spiral of analysis, design, and implementation (Savoia, 1994, p. 19). Proper software generation tools were selected based upon the models generated by the NISA steering committee, and the technical operations group. Lack of familiarity with new software (C++) forced the group to use C, as the learning curve would have been too high in implementing the project and learning new software. The system was designed to run on a pre-emptive multitasking server such as UNIX.

The group chose to run the project with Windows New Technology Advanced Server (NTAS) which was a new operating system by Microsoft at the time. Three levels of unit testing were conducted which taught the group to plan enough time for load and performance (real world) stress testing. The original versions of Windows NTAS caused the group some problems as Microsoft was still working out known bugs in the software in 1993. The group felt the most worthwhile activity in the project was the early needs assessment and discussions with user groups.

Barth (1994, p. 40) states that the most important step in any MIS project is to identify user needs, rank them in order of importance, and assess how the existing system satisfied those needs. Then new software can be evaluated according to the prioritization of existing needs and user satisfaction with delivered services.

Needs assessment surveys of Chinese educators in the People's Republic of China in 1992 helped a collaborative team deliver needed computer training services (Garland & Yang, 1994, p. 50). The team surveyed 62 Chinese educators and found that Chinese teachers used IBM personal computers for managerial and instructional purposes. With the advent of cheaper and more available hardware, educators felt that word-processing and spreadsheet uses would grow. The team was able to tailor instruction to needs through the use of surveys.

Nelson, Whitener, and Philcox (1995, p. 27) point out that despite high-dollar investment in end-user training (EUT) almost no evaluation of training programs is done to ascertain effectiveness. Further, 50% of organizations that conduct training, do not conduct needs assessment studies to determine what should be the content of the training sessions. Two early models of needs assessment identified organization, tasks, and person content area by developing a content-level framework (Nelson, Whitener, & Philcox, 1995, p. 27). The content levels frame work was tested in an end-user training project within the IRS. The results of the study found that when needs assessment includes consideration of the issues identified by the content-levels framework; when levels and training content are congruent and closely linked together; and when systems designer, project managers, and trainers are mutually responsible for the project and training effectiveness, the training is more effective (Nelson, Whitener, & Philcox, 1995, p. 28). The content framework process consisted of seven phases:

1. Identify training needs through needs assessment,
2. Determine the focus of training development efforts,
3. Describe the trainee population,
4. Inventory the job tasks,
5. Select the tasks for training,
6. Analyze the tasks, and
7. Conduct a learning analysis.

An accurate needs assessment survey was conducted of community members in Utah by Okerlund, Parsons, and Hulterstrom (1995, p. 48). The process consisted of three phases which involved polling decision makers, collecting social and economic data about the study area, and conducting random telephone interviews with 400 citizens in the area.

Thornton (1995, p. 34) documents accurate needs assessment via collecting data about the study population, measuring the economic characteristics of the market, and determining the costs and risks to opening new opportunities in the identified areas. In a similar fashion, Schultz (1995, p. 61) suggests conducting a customer needs assessment (CAN) of products and services the customer values, rate satisfaction with delivered services, and aligning human resource efforts with reports from the surveys. There are seven phases.

1. Define the objectives and the scope of the assignment.
2. Identify who the customers are and the products and services to be surveyed.
3. Design the assessment instrument.
4. Implement the instrument.
5. Measure the current human resource allocation against the results of the product.
6. Analyze the data.
7. Include key findings in the human resource planning process, which are
    a) Consolidate and clarify the customer's needs,
    b) Align human resources with the customer's objectives,
    c) Prioritize human resource efforts,
    d) Allocate resources, and
    e) Assign human resource tasks.

McArdle suggests approaching needs assessment from three perspectives: listing workplace issues that are problematic or that offer some cause for concern; examining how different people perceive workplace issues, and examining barriers that may keep group members from reaching their true potential (McArdle, 1996, p. 6).

Two types of needs assessment are delineated: problem analysis and competency models. Problem analysis identifies a problem and offers solutions. Competency models address available opportunities by identifying and acquiring new skills and abilities or competencies (McArdle, 1996, p. 6). By documenting the current state of behavior and determining the purpose of the needs assessment, the planner can choose which of these two models is appropriate.

Relevant Survey Research

A survey which measured customer satisfaction in the UK, France, and Germany found that computer users were not satisfied with services because information services (IS) staff could not keep up with user demands (Anonymous, 1994, p. 22). Inadequate hardware performance and frequent upgrades causing new rapid steep learning curves cause the greatest dissatisfaction. In 1994, the company ICL released the results of its customer satisfaction survey, which is rarely done in the PC industry (Collins, 1994, p. 14). ICL received low scores for professionalism of sales teams, speed of response to questions, complaint handling and clarity and accuracy in invoicing. The lowest marks went to PC sales, service, and delivery. Digital does not publish its customer satisfaction surveys, and IBM only publishes a generalized report. Hewlett Packard chooses to publish bits and pieces of its overall customer satisfaction surveys.

Customer service activities in the computer industry are generally comprised of core products and services which help customers garner value from core products (Loffredo, 1994, p. 61). Service is considered to be the front line of the computer business today. The competition among computer vendors and service agencies is to provide customer service, not hardware or software (Loffredo, 1994, p. 51).

In planning surveys, commitment to follow-through after surveys are returned is the most important action (Crowley, 1995, p. 63). Generally speaking identifying the main goal of the survey is the most important part of the survey. Six survey methods are identified along with prepping questions for customer review. Creating ownership on the part of the customer returning the survey is important, along with following through with the results of the survey (Crowley, 1995, p. 63).

Companies that establish web sites have struggled with evaluating web site performance (Paul, 1996, p. E1). One way is to evaluate the number of hits the web site experiences. Another is to track full-page impressions as opposed to single hits. Customer surveys actually based on the Internet help convince management that web sites provide an adequate return on investment.

The results of the InfoWorld Iway Poll on corporate Internet and reliance on online technologies indicate that the majority of businesses are using the Internet to increase customer satisfaction rather than for online commerce (Parker & Radosevich, 1996, p. 1). Businesses usage of the web is up from 20 percent in 1995 to 63 percent in 1996. Most respondents to the survey claimed that they used the Internet for increasing customer satisfaction. Custom software which generates survey data in real time is beginning to be used by businesses wishing to generate data quickly (Dennis, 1997, p. 52).

Watkins (1996a and 1996b) conducted a needs assessment and evaluation of a management information services (MIS) computer system at Nova Southeastern University. The overall level of satisfaction with MIS services was found to be 2.39 for the truth of 23 survey questions asked, and 4.07 for the importance of 23 survey questions asked. This meant that the MIS system at Nova was not delivering (2.39) services which were deemed important by customers (4.07).

Research Methodology

In this study, research methodology is defined as investigating the possible cause and effect relationship between groups of people, two variables, or relationships (Rankin, 1994, p. 6). Research methods are usually divided into two major groups: quantitative and qualitative (McMillan, & Schumacher, 1993, p. 31).

Quantitative studies seek to determine casual relationships. They are made of experimental study and nonexperimental designs. Qualitative study designs seek to develop general theories, understand natural behavior in the field, collect large amounts of field data, allow the researcher to be involved, and not be experimental in nature (Bogdan, & Biklen, 1982).

Qualitative Research

The case study is one method of conducting qualitative research. A model which reflects this dynamic on-going process is reflected in Figure 1. The case study is very similar to anthropological ethnography's in that the researcher is part of the community, and records sets of data about observed natural behavior in the natural setting. The process is dynamic and evolves as data is collected (Yin, 1984, p. 51). As results from the data are generalized, methods and ways of collecting data may be changed in the field, as the method is extremely flexible. The model in figure one is derived from McMIllan (1996, p. 238).

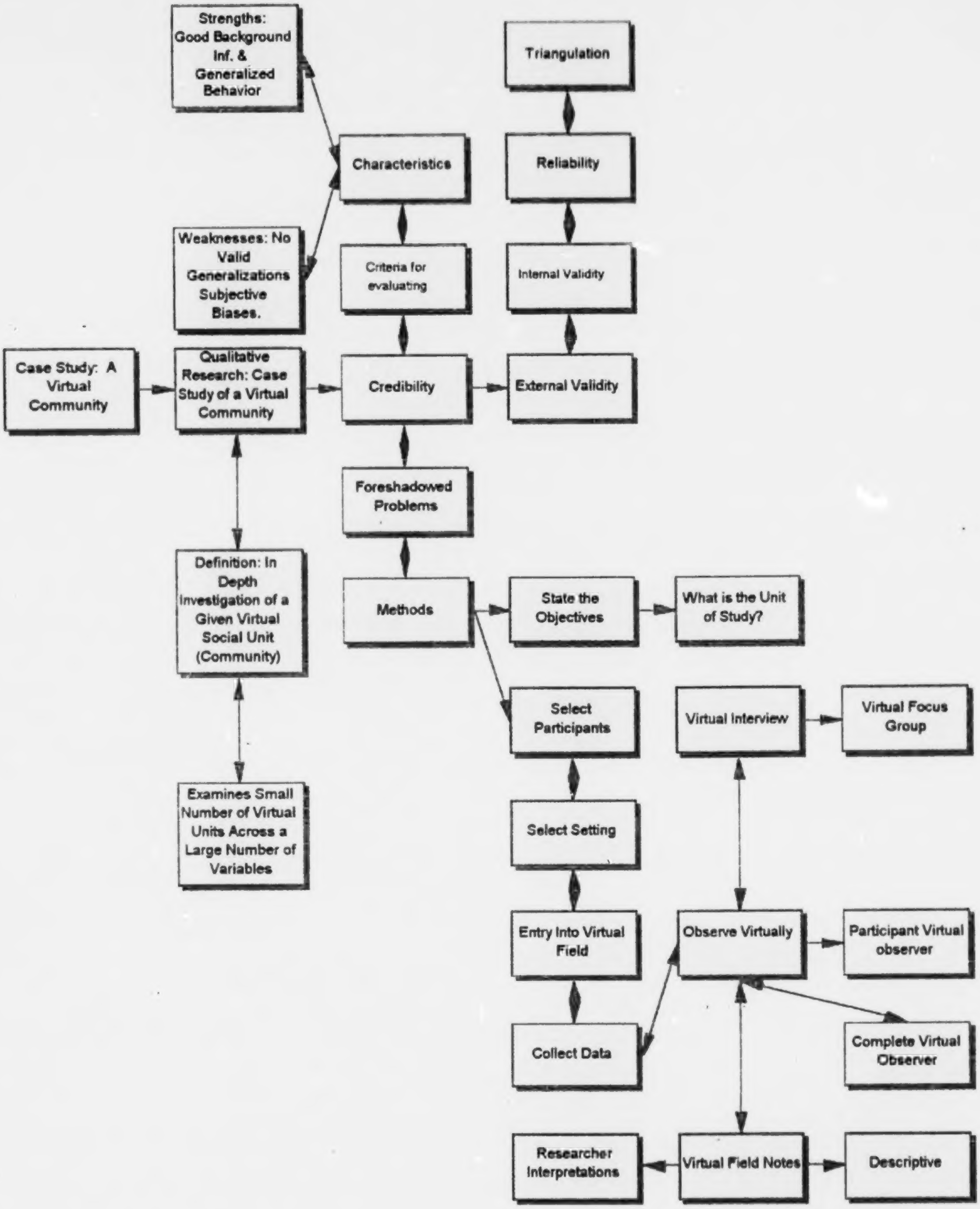
Case Studies

No case studies of academic web page development were located in the literature. However, in the third Watkins study (1997), there is some useful information which can demonstrate the method's credibility. Part of the information set collected in the summer institute online registration system by Watkins (1997, p. 1) was a set of data which determined the time of access to the web page, the address (IP) of the customer, the browser the customer used, and how often the customer had to use the web page before being successful in sending a registration online to nova.

One interesting pattern was that access times for users fell rather evenly between normal work hours (8 A.M. - 5 P.M.) and personal time (6 P.M. - 7 A.M.). In other words, half of the accesses to the web page by customers were after normal business hours. This is an example of case study information that can be collected from a web site.

Figure 1.

Case Study Methodology.


Strengths: Good Background Inf. & Generalized Behavior
Triangulation
Characteristics
Reliability
Weaknesses: No Valid Generalizations Subjective Biases.
Criteria for evaluating
Internal Validity
Case Study: A Virtual Community
Qualitative Research: Case Study of a Virtual Community
Credibility
External Validity
Foreshadowed Problems
Definition: In Depth Investigation of a Given Virtual Social Unit (Community)
Methods
State the Objectives
What is the Unit of Study?
Select Participants
Virtual Interview
Virtual Focus Group
Examines Small Number of Virtual Units Across a Large Number of Variables
Select Setting
Entry Into Virtual Field
Observe Virtually
Participant Virtual observer
Collect Data
Complete Virtual Observer
Researcher Interpretations
Virtual Field Notes
Descriptive

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Software and Hardware Issues

Developing software for the Internet is very different from developing software for desktop PCs (Callaway, 1995, p. 26). Because the web is interactive, users are able to customize what they see even while using it. The web page must, therefore, be exceptionally clear to compensate for information and instructions which are not possible to program given user customization (Callaway, 1995, p. 26).

An effective web page should also include clear and concise navigational links. Colors and graphics should be kept to a conservative level to keep page loading time down assuming most users are accessing the web via modems from home.

Things to avoid on web pages are under construction signs, blinking messages, very bright backgrounds, confusing links to other sites, huge graphics, confusing outlines, software specificity (sites must work with all software), and lack of content (Callaway, 1995, p. 26). Microsoft Windows '95 was released as a beta (test software) in 1995. With the impending market dominance of Windows '95 and Windows NT (Coffee, 1995, p. 26), the following criteria must also be followed:

1. The application should be based on a Win32 executable to take advantage of superior memory management,
2. Applications should conform to Win '95 style guidelines so that users know from prior experience how to drive the application,
3. Long file names should be supported to allow users to custom name files,
4. Support for Windows NT must be included as the majority of Internet servers are beginning to convert to this operating system,
5. The application should support object linking and embedding (OLE),
6. The application should support the universal naming convention, and
7. Mail applications for receiving mail via the Internet should be included.

Companies are moving rapidly to protect their organizations from virus attacks and hacker attacks. The protection defense strategy is called a firewall (Mohta, 1996, p. 60). Firewalls are actually a combination of hardware and software devices. The single guiding philosophy is that everything not explicitly permitted is denied. A firewall needs to be installed on a dedicated server outside the regular local area network (LAN) but part of the router link to the Internet. All network traffic should pass through the firewall.

Tandem computers has marketed a device which helps provide Internet firewall protection (Goldberg, 1995, p. 70). Devices such as this will become increasingly important as smart cards gain wider acceptance on the Internet and data encryption becomes mandatory. Road warriors who cause system crashes download software remotely and have also caused a new business niche in firewall protection services (Wagner, 1997, p. 61). Savvy network administrators learn to deal with such rogues who drive innovation and force companies they work for to remain on the cutting (bleeding) edge.

IBM and Microsoft both have plans to develop current operating systems to maximize web capabilities (Wingfield, 1995, p. 49; Glascock & Foley, 1997, p. 2). Microsoft Explorer 4.0 actually turns Windows '95 into an extension of the Internet. Office '97 incorporates web technology inside applications. The web becomes an extension of the applications. It is clear that perhaps the age of networked computers as we know them has come to an end. The network will be the web itself.

Hardware

In 1996 subcomputers which are now referred to as network computers, were considered a possible hardware alternative for Internet surfing (Mello, 1996, 27). The network computer is essentially a dumb terminal with no hardrive, no software of its own and very little user customization. The lower price and start-up costs of network computers are possibly attractive to buyers but the lack of desktop customization is lacking.

Zarowin (1996, p. 51) makes the point that Internet connections with phone wire and file transfer protocol (FTP) software cost considerably less than the average $1,000 per machine start-up costs for network attachment on LAN's and wide area network's (WAN's).

Internet start-up costs include approximately $200.00 for a modem, and a phone line. Internet access costs approximately $20.00 per month. It is possible that Internet computers will replace PC workstations. Multimedia computers have given the Internet life. They give access to alternative media such as sound files, video files, image files, and hypertext files (Shields, 1996, p. 32). Some new devices which are attachable to the Internet are calculating devices, e-mail devices, personal messaging devices, and portable assistants.

Vendors are beginning to back multicast technology over the Internet which means video, audio, and multimedia applications may be shared (Wallace, 1996, p. 24). Vendors such as Motorola and MCI have formed consortiums to share applications over the Internet. Cisco, a major hardware vendor (Thryft, 1997, p.14), has joined forces with VTEL, another major vendor and Intel to deliver real-time full motion video over the Internet using Intel's collaborative software, ProShare. ProShare is also a part of Microsoft's sortware.

Developers are racing ahead of the Internet trying to create multimedia databases which will react to forms, Java applets and ActiveX technology (Kirkpatrick, 1997, p. 93). On-line interactive databases and catalogs could be the biggest application of this new technology. Hardware vendors have been experiencing problems integrating telephony devices with computer devices which carry fax, video, and video capabilities (Leong, 1997, p. 38). The demand to provide telephony capabilities is thought to be the fastest exploding sector of the Internet market.

Summary

Basic social and behavioral rules need to be drafted for life in the new "virtual community" (C. Martin, 1997, p. 45). The community must be "agile" and react to changing business conditions (Goldman, 1994, p. 43). The web presence must elicit a sense of community so that customers feel as though they belong (Petersen, 1996, p. 59). Allowing customers to access the virtual community with a self-service concept should give customers a greater feeling of comfort with this new media (Schwartz, 1997, p. 1). A review for content of the web sites should help determine what gives community members a feeling of belonging. The web site should actually be viewed as a computer supported social network (CSSN) which defines culture (Wellman, et al, 1996, p. 213) for the members (norms, structures, constraints and social control).

The web site cannot be forced on members of the PHE adult learning community (Johnson, 1996, p. 16). During the planned summer institute in Fort Lauderdale, Florida members of the PHE virtual community should be trained in how to interact with this new community (Greenfield, Tellman & Brin, 1996, p. 22). The labs must reflect a real world facility, be planned before hand, and allow for sufficient hands-on training time. If faculty members wish, they should be able to learn how to port their curriculum material to the virtual community (Hobby, 1996, p. 32). Each member of the virtual community (Rose, 1994, p. 53) should be given a learner's bill of right as part of a Adult Education Paradigm (AEP). The Mercer University web course in distance learning technology should be reviewed for content to validate the proposed training sessions at the summer institute computer labs (Leonard, 1996, p. 388). As adult learners, it should be assumed that some faculty and students will be computer phobic. This should be dealt with in the manner proposed by George, Sleeth, and Pearce (1996, p. 604).

The web site should be well-designed to allow for the fastest possible load times using modern software (Ey, 1997b, p. 10). The proposed web site should be reviewed by an advertising agency executive (R. Henry, personal communication, Stone and Ward Advertising, May, 1997) for content and function. Push technology is probably not possible at this time because of high costs, but the possibility of that eventual inclusion in the web site should be planned for in the design of the site now (Babcock, 1997, p. 113). The site should be designed to capture customer information and allow for the free exchange of information between customers (Ubois, 1997, p. 40). Administration should be given a frequently asked questions (FAQ) page to answer concerns (Houser, 1997, p. 25).

Criteria (Watkins, 1996b, p. 2) for the web page should be determined in a meeting with PHE administrators, and through the use of expert sources in the PHE community (CIT students, web page users, and so forth). A pilot test of the web page which is reviewed by a formative and summative committee should be conducted with two test groups: The Minnesota and the Pensacola Clusters (Watkins, 1997, p. 1). A systems model for web page development is presented in Appendix B (Kemp, Morrison, & Ross, 1994, p. 9).

The finished web site can be evaluated at the 1997 Summer Institute in Fort Lauderdale, Florida. Appendix A reviews a possible evaluation instrument for assessing the effectiveness of the web site (Watkins, 1996a, p. 2). The training sessions for the labs can be formed around the framework suggested by Nelson, Whitener, and Philcox (1995, p. 28). Also, as part of the web site itself, a needs assessment page can be mounted polling customers for their wants and desires similar to the Chrysler model of Kiosks (Knowles, 1997, p. 68).

During the pilot test of two cluster sites, a case study can be conducted to see what natural behavior follows from this new medium for PHE. As no information exists, this study should be exploratory. The model followed is reflected in Figure 1. Each step will collect data, and new plans will be formulated from previous steps (Watkins, 1997).

Callaway's suggestion for software development of web sites should be adhered to (Callaway, 1995, p. 26). Because of market dominance of Microsoft products, the web page should be mounted on a Windows New Technology Advanced Server (NTAS) and follow the criteria developed by Coffee (1995, p. 26). It is unknown at this point what firewall protection

(protection from hacker attack and viruses) will be put in place, but that function has been assured by MIS at PHE (J. Peck, personal communication, April, 1997). The web page should be mounted on a file server which is compatible with hardware requirements for running Windows NTAS.

Chapter 3.

METHDOLOGY AND PROCEDURES

Methodology

A combination of development, research, and evaluation methodologies was used to complete this research study. The methodology matrix is presented in Table 1. The survey instrument for evaluation is presented in Appendix A. A systems model for curriculum development is presented in Appendix B. The data collection instrument for case study data collection is presented in Appendix C.

Procedures

A review of the literature with regard to all research questions was made. This established a theoretical base for proposed research, and included a summary of research.

Research question one (what elements should an Internet community contain) was answered by using a development methodology approach to virtual community criteria development, formative and summative review of the virtual community, and a pilot test of the virtual community (D. Remington, personal communication, April 6, 1996). The pilot test assessment form captured case study data via electronic media (see Appendix C).

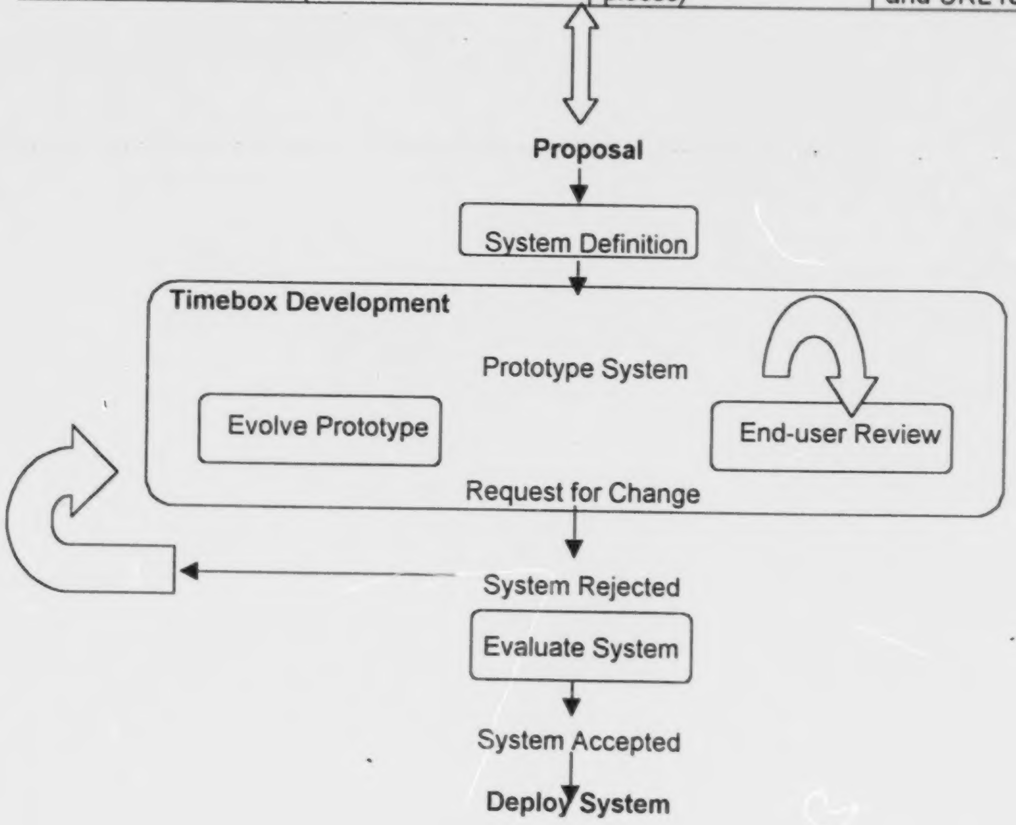
Research question two (what design issues should be considered) was answered by using a Timebox Development approach (McConnell, 1996, p. 577) from rapid application development (RAD) theory (see Figure 2). RAD theory is defined as software development projects completed in less than 120 days, with pre-existing prototypes. The system was developed in stages (four betas, 1.00 - 1.03).

Research questions three and four (how can the virtual community be evaluated, and how can community members be trained) were addressed by using an evaluation methodology at the PHE summer institute computer lab sessions in July, 1997 (D. Remington, personal communication, April 6, 1996). The virtual community was created July 1, 1997. The 14

Figure 2.

Timebox Development Application Theory (from RAD)

Efficacy	Major Risks	Major Interactions and Trade-Offs	Stages of Betas for PHE
Reduced time frame for development of application	The product developed may not be suitable for timebox development methods	Timebox depends upon evolutionary prototypes (several betas)	Beta 1.00 produced a revision of the original prototype for PHE use.
Reduces risk of software schedule falling behind	Quality may be sacrificed to achieve a finished product	Features of the software are traded for quick development time	Beta 1.01 produced a revision of the original header and footer files.
Chances for success are excellent		Can be used with other RAD methods	Beta 1.02 produced additional functions.
Chances for long term success are excellent		Can be used with evolutionary delivery (phases of the project are delivered in pieces)	Beta 1.03 produced additional changes in artwork, type sizes, corrections to links and URL references.



student lab sessions, 8 faculty lab sessions, and 2 general sessions allowed ample opportunity for training, and use of an online likert scale survey for evaluating the virtual community (see Appendix A).

Research question five (how can the virtual community be assessed for its effectiveness?) was addressed by using a qualitative case study approach to assessing the effectiveness of the pilot test study. A case study collects information about behavior in a natural environment, and produces a large set of data for further quantitative studies (Isaac & Michael, 1995, p. 52). A model is reflected in Figure 1 (McMilian, 1996, p. 238).

Table 1.

Research Methodology Matrix.

Phase 1 5/1/97 - 7/1/97 Development and Pilot Test of web sites	**Phase 2 5/1/97 - 7/1/97 Qualitative Research Case Study of Pilot Test**	**Phase 3 7/1/97 - 8/1/97 Evaluation of web sites and summer institute curriculum**
Literature Review	Data from online pilot test are collected in a case study format.	Web pages are put on web July 1
Criteria selected	Data is evaluated according to case study format, Figure 1.	Web pages are used at summer institute
Criteria reviewed		• 14 student sessions
Survey of selected criteria		• 8 faculty sessions
Production of web pages		• 2 general sessions
Formative committee review		Web pages are evaluated on-line for effectiveness using computer survey likert-scale.
Summative committee review		
Web page sessions delivered to clusters for pilot test		
Web pages put on web July 1		

The virtual community was designed, developed and pilot tested in the first phase of this study. The procedures employed for the development phase were (a) a literature review was conducted, (b) criteria for the virtual community were selected from the literature review, (c) criteria for the virtual community were reviewed by a committee of Programs for Higher

Education staff (see Appendix D), (d) a survey of the selected criteria was sent to computing and information technology students for review (see Appendix E), (e) the virtual community web pages were developed and mounted on a Windows NT server (see Appendix F), (f) a formative committee reviewed the developed product (see Appendix G), (g) a summative committee reviewed the final web pages after input from the formative committee (see Appendix H), (h) a pilot test of the web pages was conducted, and (i) the web pages were released to PHE on July 1, 1997.

A case study of the pilot test was conducted in the second phase of this study. The case study assessed the effectiveness of the development product. The procedures followed were (a) the online pilot test generated qualitative data for the case study, and (b) the case study data was evaluated according to a case study format (see Appendix I).

Finally, the third phase of this study determined the effectiveness of the development product through evaluation of the virtual community at the summer institute in Fort Lauderdale, Florida. The faculty, staff, students, and stakeholders of the virtual community were trained in the use of the virtual community at the summer institute in Fort Lauderdale, Florida.

The procedures followed were (a) the virtual community web pages were put online July 1, 1997, (b) the virtual community web pages were used at the Programs for Higher Education summer institute, and (c) the virtual community web pages were evaluated for effectiveness in 14 student computer lab sessions, eight faculty computer lab sessions, and three general administrative computer lab sessions (see Appendix J and Appendix K).

A major emphasis in the first stage of the literature review was the identification of factors which contribute to successful web sites. A successful web site is one which meets customer (student) needs. Literature regarding technical specifications for the web site, load times, and design of the pages was also located. This information was necessary to construct a successful web site which would be used by customers (students). The criteria review and identification followed from the literature review. The criteria further helped identify what successful web sites should exhibit in order to meet customers' needs. These were expressed as a list of 13 criteria or "rules" for successful web site construction.

The committee of Programs for Higher Education staff further helped delineate what a successful virtual community should exhibit to meet customers' needs. Staff members met a total of three times to help determine what the virtual community should offer its customers.

A survey (list) of criteria was sent to PHE CIT students. The survey asked for their comments on the identified virtual community criteria via e-mail.

The virtual community was developed from the results of the prior stages. The pages were mounted on a Windows NT server. The pages were developed using Front Page '97 (web authoring software), and Active X pages (scripted, interactive pages).

The formative and summative committees reviewed the product by surfing the net and making comments about the virtual community. Comments were received via e-mail from committee members. Updates were made to the site based upon their e-mail comments.

After the initial development of the virtual community, an online pilot test was conducted with two PHE clusters, Pensacola and Minnesota. Cluster coordinators were involved in the structure of the web site, and students were asked to use the services offered and make comments in the appropriate suggestions areas of the web. Several areas were programmed to offer customer services which would meet customer needs.

The second phase of the study involved conducting a case study of the pilot test in phase one. The online pilot test generated qualitative data for the case study from user Internet access during the pilot test. When users from the Pensacola and Minnesota clusters accessed the web site and left comments, a file was written to the PHE web server noting time of day, IP address, browser used, and name of the remote machine. This data was captured in an Access '97 database and tabulated for assessing the effectiveness of the web site.

The third phase of the study involved placing the pilot test web site online July 1. The web pages were used by PHE faculty, staff, and students at the PHE summer institute. To use the site, the faculty, staff and students were trained in the effective use of the site at summer institute computer labs. After each training session (14 student labs, eight faculty labs, and three general sessions) each participant filled out an online evaluation form. The evaluation form utilized a likert scale format and was used by permission of the academic computing director at NSU (Jennie McClain, personal communication, May 6, 1997). The online evaluation form generated an excel spreadsheet which produced data for evaluating the effectiveness of the PHE virtual community. The final version of the virtual community was mounted for use by the PHE summer institute on September 1, 1997.

Assumptions

It was assumed that this project is nondiscriminatory with regard to learning styles, race, gender, age, and ethnicity. It is also assumed that all project participants cooperated voluntarily in training sessions, and pilot tests. It is assumed that the literature search is complete and accurate. It is assumed that a virtual web community will enhance the mission of PHE customer services. It is assumed that the case study format, the evaluation format, and the timebox approach to application development is appropriate. It is assumed that two committees of judges is sufficient to properly assess and validate the accuracy of content and instruction design of this project.

Limitations

This project was only intended for development at PHE. The degree of computer phobia which was encountered may be more than the expected 9 percent (Anonymous, 1995, p. 8). That may affect how people cooperate and whether faculty embrace this new model for training and curriculum delivery. The reliability and validity of the evaluation survey was not determined. The statistical significance of the collected case study data was not determined.

Chapter 4.

RESULTS

The organization of this chapter was built around three phases of the study and five research questions. The chapter concludes with results obtained from the qualitative case study and tabulation of evaluation information from the PHE summer institute labs.

Phase one involved a developmental research procedure which produced the virtual community (see Appendixes B, D, E, F, G, and H). Phase two involved a qualitative research case study which produced data for assessing the effectiveness of the web site (see Appendixes C, and I). Phase three involved an evaluation of the effectiveness of the developed virtual community (see Appendixes A, J, and K).

Research Question One and Two (Development Phase One)

Research questions one and two were answered by using a developmental research approach. A literature review was conducted to help identify criteria for components of a successful virtual community (see Appendix E). The literature had suggested that successful virtual communities needed rules because behavior needed to be monitored. It is theorized that virtual communities remove some behavioral inhibitions due to anonymity. Rules are also needed because administration at Nova Southeastern University requires a signed computer code of conduct from each student utilizing a UNIX account. The rules for conduct are spelled out University-wide--both in the preprinted forms, and on each page of each authorized NSU web page. Each page of the PHE Virtual Community was programmed following the applicable rules, and each student who was going to participate in the pilot test was required to sign a UNIX account form and computer code of conduct form.

The literature review had revealed that virtual communities needed to be agile, meaning that they change quickly to react to customer needs. One example of this lack of agility on the part of PHE was the discovery that much of the information retained on the UNIX Internet pages was left over from 1996. In other words, the web sites were not maintained properly and had not been changed (due to staffing shortages) for a year. Also, in determining that the virtual community must be agile and react to change, it was discovered that PHE web sites maintained old schedules, e-mail directories, and catalogs. This was changed when the new pilot virtual community was mounted.

The literature search and the meetings with the PHE Educational Staff (see Appendix D) resulted in the agreement that people who belong to the virtual community must feel that they are part of the community. They must feel motivated to want to participate in events. This motivation must result from a sense of satisfaction at taking part in "virtual community" life. They also must gain ownership over the community by taking part in it's design, construction, maintenance, and content.

Customers (students) who were allowed self-service access (for instance, leaving comments in a threaded discussion page or registering online themselves) increased usage of the virtual community (discussed later in the pilot test section). In other words, allowing access to the virtual community to complete registration procedures, download study guides, download portfolios, and other useful services increased virtual community participation.

The literature search and the PHE Criteria Review Committee agreed that the virtual community could not be forced upon anyone. For this reason, access to the virtual community was allowed for all PHE stakeholders. However, alternative methods of completing requested information were provided. For instance, online registration for the summer institute and class registration were provided via use of the virtual community. An alternative method of registration was provided via use of a toll free telephone number to PHE. Information could be collected by support staff from students via the telephone and input into the virtual community.

The literature search, the PHE criteria review committee, and comments from the virtual community pilot test all agreed that training for skillful access to the community must be provided. A training curriculum was designed and presented during the evaluation stage of this study (see Appendix A, J and K). It was further determined that this training must reflect a real-world physical hardware and software environment. This is so that trainees could react in a familiar environment which had meaning in their daily experiences.

It is undetermined at this date how many PHE stakeholders are computer phobic. It was assumed (from the literature review) that at least 9%, and perhaps as high as 25% suffered from this fear. For this reason, training was offered many times and in many formats at the summer institute. This was to "coax" attendees into overcoming fears and phobias about learning technological skills in front of other peers. When necessary, private sessions were offered, along with coaching sessions over the telephone as students attempted to access this new medium.

Front Page '97 web authoring software was used, partly because it is Windows '95 compatible. It was also used because it offers completed tool sets for developers. One of the tool sets is a gauge which determines how long each page will take to download at 28,000 baud's per second (BPS) over the Internet. The Front Page '97 software documentation revealed that load times needed to stay within a three to five second limit when downloading to students' machines. With a few exceptions, this standard was adhered to rigorously to allow for fast load times.

Once the virtual community was actually developed, it was mounted on a Windows New Technology Workstation (Win NT) 4.0. This software allows user customization through advances in software technology and updated operating systems. The pilot test site was mounted and tested for 30 days by two PHE clusters, to gather case study qualitative data about how the web site was interacted with by people (see Appendix C, and I). The pilot test continued through four versions of the beta software (1.0 - 1.03). When revisions were made to the test software, new versions were posted on the pilot test web site, and copies of the updated materials were distributed to PHE faculty and staff and cluster members of the pilot test.

A systems model for web page development was utilized (see Appendix B). The Kemp model calls for studying learner characteristics, task analysis, instructional objectives, content sequencing, instruction strategies, instructional delivery, evaluation instruments, and instructional resources. The learners were PHE stakeholders who are adult learners (see literature review). The task analysis was built into each web page so that each goal of each page was self-explanatory to the user. The instructional objectives of the virtual community were to make the community useable by low to moderate skill level Internet users stand-alone (by themselves without teacher intervention). The instruction strategy used was delivery of hypertext and hypermedia via the Internet. The evaluation instrument used is reflected in Appendix A. The instructional resources used were the Internet, Front Page '97, Microsoft Windows NT, and various protocols for delivering files via the internet.

Table 2 reflects results from the input of the formative committee. Table 3 reflects input from the summative committee. Comments were generally divided into several categories concerning quality of the artwork, load times of the web page, and content. Each comment was addressed by issuing a different version of the software. Four major changes were made to the software (Beta 1.00 - 1.03) before the finished product was considered satisfactory by the formative and summative committees. Communication with the formative and summative committees was accomplished via Pine UNIX e-mail. A list of members of each committee by e-mail is listed in Appendix G and Appendix H. Appendix G (Formative Committee) is a list of pilot study members by e-mail who successfully used the web site to register. Members of the summative committee (Appendix H) were asked to participate via their membership in the technical representatives committee of FCAE. Each member is a technical representative of their respective program at FCAE.

Table 2.

Formative Committee Input

Respondent	Comment	How Was the Concern Addressed
Respondent One	• e-mail link doesn't work • too technical looking • portfolio is too intimidating • change the look of the site more often • the forms work well	• removed • added art • will place another student portfolio in final version • will try to change site once a week • will add forms in Beta 1.03
Respondent Two	• The site does have rules. • Meets customer demand. • Each cluster should have a web • Users were not intimidated • The web site loaded quickly. • The system model of web development worked.	
Respondent Three	The staff at FCAE acted like they didn't know anything about the web.	The author trained several staff members in the use of the pilot web site.

Three members of the formative committee responded. Responses were generally favorable. Adjustments were made in the beta to solve identified problems.

Table 3.

Summative Committee Input

Respondent	Comment	How was the Concern Addressed
Respondent One	• Hard to find way through links • More variation in fonts • Background too bland • Infrastructure is good	• Added more links • Added more fonts • Added more fonts • Added speckled.gif
Respondent Two	• Background too bland • Opening screen too crowded • Dark blue too dark for PowerPoint	• Added speckled.gif • Removed text. • Changed to lighter blue
Respondent Three	• Get better NSU graphic • Move hyperlinks after instructions • Add search to PHE directory page • E-mail didn't work • Form worked, but name was not required • Put acast help desk in FAQ page	• Removed graphic • Moved hyperlinks • Added search • Removed • Form was not constrained • Put link in FAQ page • Added wrap feature

Research Questions Three and Four (Evaluation Phase Three)

Training for using the finished virtual community was evaluated by use of a Likert scale survey (see Appendix A, J and K). The evaluation survey was used to determine if the training met the needs of the PHE stakeholders. The complete results are displayed in Appendix K. For PHE stakeholders to be able to evaluate the virtual community, they had to understand how it worked. This training was accomplished in a PHE Central Staff training meeting, 14 student computer lab training sessions, 8 faculty computer labs training sessions, and 3 general sessions (see Appendix J). The curriculum delivered was in two parts: a) What is a virtual community? and b) How is it used? The training was accomplished in the summer institute computer labs on Windows '95 workstations, with T1 access to the Internet. A summary of results for training is presented below in Table 4.

Table 4.

Summary, Summer Institute Evaluation Training Sessions

Question #	PHE Central Staff μ n=8	Faculty Labs μ n=21	Student Labs μ n=23	Faculty Development μ n=55	Total Average μ n=107 Per Question
One	4.66	4.66	4.73	4.16	4.56
Two	4.16	4.80	4.63	4.07	4.42
Three	4.50	4.71	4.43	3.90	4.40
Four	4.66	4.66	4.63	4.29	4.57
Five	5.00	4.90	4.91	4.47	4.82
Six	4.50	4.61	4.59	4.20	4.48
Seven	4.83	4.80	4.78	4.25	4.67
Eight	4.33	4.71	4.86	3.68	4.40
Total, Groups	4.58	4.73	4.70	4.13	4.54

The evaluation data in Table 4 was captured from the sessions mentioned above for each of four different groups: PHE Central Staff, faculty computer labs, student computer labs, and the faculty development session. Each figure is reported as a mean (average) of the range of scores reported in Appendix K. The PHE Central Staff mean for evaluating the virtual community was 4.58. The faculty labs mean for evaluating the virtual community was 4.73. The student labs mean for evaluating the virtual community was 4.70. The faculty development mean for evaluating the virtual community was 4.13. A total means score (4.54) for all four groups is reported in Table 4. Watkins (1996b, p. 3) reported that a mean average score for user satisfaction with computer services and training could be determined to be satisfactory if the mean score achieved was 3.0 or higher. This mean score of 3.0 was set by perceived user satisfaction according to the Watkins study. The training for the virtual community and the virtual community itself appear to meet perceived customer needs. Each mean score for each group (in fact each individual mean score) was at least 3.0 or higher.

Research Question Five (Case Study Qualitative Research Phase Two)

A pilot test was conducted of the virtual community by two PHE clusters. The pilot test also included an online registration system pilot and a pilot test of registration for the summer institute. The purpose of the online registration system pilots was to test the feasibility of online Internet registration for PHE. The study was a success and also generated a great deal of raw data for the case study phase of this project (see Appendix I).

A case study generates large volumes of data through observing behavior. The data is collected in the field through naturalistic observations of subjects (see Figure 1).

Case studies according to this model must begin by stating the objective. The objective was to collect a large set of data in the field as subjects participated in a naturalistic setting together on the Internet. Subjects were going to attend the PHE summer institute and really self-selected. They were part of the case study if they successfully completed an online registration and wrote a registration file to the PHE Internet database. Likewise, subjects were not selected if they did not complete an online registration for PHE and write a PHE database file. The setting was one of two registration pilots on the PHE virtual community: the summer institute web page or the South Florida Cluster registration web page. Entry into the virtual "field" was accomplished via setting up a pilot web site and programming the site to be able to automatically record the results of each successful visit to the web site.

Data was collected via querying an Access database which was constructed to analyze data from the successful registration database Internet file. The observations were collected virtually via capturing the Access database. Virtual field notes were accomplished via comments which successful students left on the web site, e-mail which was sent to the author, phone calls for technical support made to the author, and phone calls made to other staff which were relayed to the author second-hand. The virtual focus groups were the two pilot registration groups reflected in Appendix I. Virtual field notes are described further in this section, and interpreted in Chapter Five of this study.

The case study was divided into three sections. These sections were data quantified from the first online registration pilot, data from the second online registration pilot, and e-mail information from pilot number three (Appendix I, register query, inforeq query1, and e-mail query). The case study was divided into these three sections because they involved different field observations at different times and places on the Internet. The groups were also different in size, as one group contained 40 observations (register query), one group contained 395 observations (inforeq query1), and one group contained 153 observations (e-mail query). Table 5 contains an analysis of the data captured from both pilot one and two field observations. Pilot one equals inforeq query, and pilot two equals register query. Table 6 contains information captured from the e-mail field observations (e-mail query).

Data for Tables 5 and 6 were collected from an Access database which was written to capture information from case study field observations. Several sorts (queries) were completed to tabulate the hundreds of field observations which together make up the virtual field case study. As a virtual field case study collects information online for field observations, this method captured all information possible from each encounter with the web sites. Statistical analysis of the case study information is not possible at this time because random sampling methods were not used for sampling purposes. This is reference data for later study.

Table 5.

Case Study Field Observations, Summarized

Pilot One or Pilot Two	# of IP's	# of Cases (& # via ISP from home)	Gender of Visitor	Dates & Most Used Date	Times & Most Used Time	Browsers Used & Most Popular	Type of PC & Total Count
Pilot One	196	395 (61%) (155 ISP's) (39%)	162 M (41%) 233 F (59%)	3/5/97- 6/3/97 (3/25/97)	1:05 - 23:52 (18:00)	8 Net 3.01 19 (Net 3.01 Gold Win '95)	MAC's=21 (5%) PCs=374 (95%)
Pilot Two	29	40 (75%) (10 ISP's) (25%)	16 M (40%) 24 W (60%)	4/27/97- 6/2/97 (5/12/97)	01:11- 23:11 (16:00)	1 AOL 3.0 6 MSIE 3.01	MAC's=1 (2%) PCs=39 (98%)

The number of IP addresses differs from the number of cases or visits to the site for technical reasons. An IP address is assigned by a computer to a visitor on the Internet in at least two ways. One way is by hard coding the IP address permanently into the computer hardware. The second way is to assign an IP address automatically to a visitor on the Internet via an online Internet Service Provider (ISP) such as American On Line (AOL) or Microsoft Network. Visitors to the Internet, then share a common IP address because it is assigned temporarily to them as long as they are surfing the Internet via their ISP. Of the 395 cases in pilot one, 155 or 39 percent represent use of an online service. Of the 40 cases in pilot two, 10 or 34% represent use of an online service. Usually, it is safe to assume that one is surfing the Internet using an ISP from home, as a modem is required for Internet access. Therefore, although technically not an absolute, probably all users accessing the Internet via an ISP were at home. The rest were somewhere else accessing the Internet via a network.

It is notable that such a high percentage of pilot number one accessed the Internet via modems from home. General figures in the press and computer trade manuals often state that the saturation of computers at home (computers with modems) has not reached 25% of the American public. For whatever reasons, 39% of this study population chose (or were forced) to gain access to the PHE website via modems from home. In pilot number two, only 25% of the sample population utilized their computers at home. This difference is assumed to be caused by the fact that the pilot was conducted in the PHE South Florida cluster. Many cluster members are employees of NSU and have access to network computers. Many other students work at institutions of higher education in the South Florida area and also have access to networked Internet access. This is further theorized to be true because the most popular time for completing online registration was during normal working hours (4 P.M., pilot two) as opposed to 6 P.M. (pilot number one). Most employed adults would be assumed to be at work at 4 P.M., and on their way home at 6 P.M..

The most popular browser in pilot number one was Netscape 3.01 Gold for Windows '95. This interface is very popular with computer users because it is free, it is standardized, and add-on products are widely available. In the second pilot study, Microsoft Internet Explorer was the most common browser. Again, this is theorized to be true because many South Florida cluster members are employed by NSU or other similar institutions of higher education.

Gender figures for both pilot groups fall within acceptable reporting ranges for the entire PHE student population. Generally, more women than men are currently reported as active students at any one time in the program's databases. Pilot one does not appear to show any patterns in dates of access (see Appendix I, inforequest query charts). Pilot two does show a pattern which appears to closely resemble a bell shaped curve (see Appendix I, register query charts).

The literature review for research question two revealed that the PHE web site should be developed on a Windows '95 compatible platform. The most popular browser used in sheer numbers, as reported in Appendix I, are Netscape 3.01 and Netscape 3.01 Gold on a Windows '95 software platform.

For many years, Apple computers reported that they controlled at least 10 - 20% of the computer hardware market. According to this pilot case study, Apple controls at most 5% of the market. This is significant because the sample populations which self selected to register using these pilots are educators commonly thought to use exclusively Apple platforms.

It is important to point out that perhaps more Apple users tried to access the web site and were not successful. If that is the case, then computer users self-selected based upon whether they were familiar with PCs and surfing the Internet using IBM compatibles, or they were not successful because they used an Apple System & platform. This could be one technological form of "survival of the fittest." Computer users self-selected based upon their hardware platforms for successful surfing via the Internet.

Other information collected in the case study consisted of e-mail messages, information from phone calls, and comments left in the pilot test web sites. There were two phone calls of substance. One involved registering a faculty member from the Air Force Academy in Colorado Springs on pilot number one. His comment was that this was a much needed addition to PHE's services. The second phone call was from one of the administrative leaders at NSU. The leader had her assistant enroll her over the phone via the Internet web site. The assistant's comment was that the Internet site was "awesome."

No comments were made via pilot two. A search of the database was made and no comments were written to the database in the comments field. This is perhaps caused by the fact that the duration of this pilot was much shorter, and only contained 40 cases.

In pilot one, 59 comments were made in the database. One comment was left by a fellow software developer about the size of the fonts in the database. He also made the comment that it was time PHE engaged in hypermedia to deliver education. A second comment noted that only registration was possible via this new medium. She wished the whole PHE process was online.

The rest of the comments (57) were concerning corrections to material entered previously, or asking for special accommodations at the summer institute. The majority of the comments appear to have been made in the first half of the pilot test period. If computer access theories are true, early adopters registered first. Hence, the majority of the early comments would appear to be theoretically sound in that they appeared in the first half of the study. People who were inclined to be more computer phobic and intimidated by technology (or perhaps just procrastinators) made fewer comments at the end of the study.

A summarization of e-mail case study information is presented in Table 6. Data was collected via use of UNIX Pine E-mail at NSU. The information which this summary reflects appears in Appendix I, Email query. The messages recorded were divided into one or two cursory remarks about general PHE matters (2 records), and the virtual community pilot (151 records). All messages were received during the time period from 4/21/97 - 6/5/97, with the most messages received on 5/20/97 (17). Because of time constraints upon the author's' schedule, pilot messages using Pine e-mail were not recorded after 6/5/97. Time of day varied from 01:27 A.M. - 23:43 P.M., with the most popular time being from 2 - 3 P.M. (21). There were 124 faculty messages, and 19 student messages. There were 47 total people participating in the pilot of e-mail messages. Twenty three were female, and 25 were male. Twenty three participants used NSU Pine e-mail, while 24 participants used another e-mail system to communicate with the author.

Table 6.

Case Study E-mail Field Observations, Summarized

Pilot Three	# of Records (cases)	# of Individual People	Gender of People	Dates and Most Used Dates	Times & Most Used Time	E-mail Used	Type of PC
Pilot Three	153	47	25 M (51%) 23 F (49%)	4/21/97 - 6/5/97 (5/20/97)	01:27 A.M.- 23:43 P.M. (2-3 P.M.)	23 Pine (49%) 24 Other (51%)	N/A

A cursory comparison of the data reflected in Table 5 and Table 6 appears to suggest that a greater total percentage of males used e-mail than did females. This is perhaps because the percentage of males in Table 6 is much higher than in Table 5. A greater percentage of females used the Internet than did males in Table 5. The dates of the pilots did not coincide exactly as each period was designed to test a particular function of the total virtual community. However, e-mail usage appeared to be more a phenomena utilized during normal business hours than did Internet usage. The most popular times for e-mail access were between the hours of 2 - 3 p.m., while Internet usage was popular between the hours of 4 - 6 p.m. There is no theory for this observation. Perhaps people use e-mail at work and the Internet at home.

Yin (1984, p. 51) presents a case study method for collecting single-case data and cross-case analysis. This model was utilized in presenting data in Tables 5 and 6. From the presented case study data, policy implications can be determined in Chapter 5.

While the data represented in this study cannot be considered statistically significant since it is a case study of qualitative data, it can be considered a benchmark for further quantitative studies. One interesting question would be the matter of determining the statistical significance of preferred access hours between e-mail usage and Internet usage. Another interesting question for future research would be the comparison of gender-specific figures reflecting usage of either e-mail or the Internet. Another question could be the percentage of UNIX e-mail users at NSU who are not faculty or staff members. It is presently true that most users of Pine e-mail in this study were faculty or staff members at NSU. If staff members were eliminated, the usage of pine e-mail figures in this study would drop to 0%. In other words, the only people presently using Pine e-mail with any regularity are the faculty and staff members at NSU who are forced to use it. Other NSU PHE stakeholders find different ways to communicate with PHE.

Summary

A virtual community was constructed, pilot tested, and evaluated at PHE from mid-May, 1997 - mid-August, 1997. The community was judged by formative and summative committees to be useful and easy to use. The community was evaluated as being useful by faculty and staff at PHE's summer institute labs. A case study was conducted of qualitative information and resulted in patterns of usage and software preferences.

Chapter 5.

DISCUSSION, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Discussion

The phenomena of the Internet, virtual communities, and new forms of communication are overwhelming business, education, and medicine (to name a few areas of commerce). Software changes from day to day, literally. Microsoft has released within the past three months (March - June, 1997) two new Internet development platforms (InterDev Developer and Visual Studio), a new database connectivity language (ActiveX), and new server-workstation program calls (active server pages). This does not take into account software still in beta (Internet Explorer 4.0, Windows NT commerce servers, a new version of Front Page '97, and so forth). The cartoon presented at the front of this MARP was intended to point out that new technology brings with it new challenges for utilizing the technology. As shown in the literature review, the design and development of virtual communities requires a broad depth of understanding in software and hardware platforms, adult education, technology, legal and moral issues, and graphical computerized artistic skills. The literature further points out that doing business on the Internet is a whole new area of economics, as noted by the phrase "Webonomics." The world, for better or worse, is transforming itself into a virtual community with new rules, new power structures, and new access privileges and rights. A new class of illiterates will be created by lack of access (through lack of computer skills) to this virtual brave new world. The challenge to education is to guarantee access to the future through access to this new medium.

At PHE, the faculty and staff attempted to insure their future and the future of the program by boldly embracing this new medium for communication. PHE should be commended for daring to go "Where no man or woman has gone before." PHE realizes through the pilot study and evaluation studies that the curriculum, method of instruction, and indeed the material itself **MUST** change to adapt to this new medium. PHE finds itself in a situation similar to that of Rip Van Winkle. He, having slept for 40 years, awakened to an entirely new world. The challenge is to adapt to life in the virtual fast lane.

PHE must also endeavor to retrain an entire workforce (faculty and staff) to utilize this new form of communication. Also, its stakeholders (students and graduates) must be trained to access the virtual world of the Internet. The virtual community which was developed, pilot tested, and evaluated during this study, gave PHE the opportunity to begin training it's faculty and stakeholders. There is no going back now for PHE.

Conclusions

The following conclusions were reached as a result of data collected from the case study, the development process, and the evaluation of the virtual community. Based upon the comments of the formative and summative committees, a virtual community does need to exist for PHE. Also, based upon the comments of the users in the pilot test, the virtual community was very useful and provided an alternative "awesome" method for communication with PHE. The need for the virtual community, in fact, exists to such an extent, that two members of the PHE staff were awarded a Bonus Incentive Program (BIP) for collaboration in delivering one part of the PHE virtual community to stakeholders. The award included an announcement, a ceremony, and a $500.00 cash bonus.

Based upon the results of the rapid application development model (RAD) the method works well for pushing software timetables out the door quickly. The problem with RAD is that sometimes quality is sacrificed for the sake of deadlines. This was reflected in the numbers of comments about quality in the formative and summative committee remarks. Speed in software delivery does appear in this case to have sacrificed quality to scheduled timetables.

The skills necessary for the delivery of a virtual community are incredibly complex. Some of the skills as evidenced by the literature search and development phase, included:

- PC hardware skills
- adult education skills
- business skills
- management skills
- system analyst skills
- graphic artist skills
- PC software skills
- sociology and psychology skills, and
- marketing skills.

Clearly, this needs a talented project team with diverse skills and backgrounds. One is tempted to state that Leonardo di Vinci would be hard pressed to apply for a job as a virtual community creator. The depth and breadth of mastery of skills is exhaustive.

Evaluation of a virtual community is absolutely imperative, just as it is in evaluation of paper-based medium. A virtual community must be evaluated in a natural setting, online free of time and access restraints. Only then can natural behavior be observed. This establishes patterns of usage, preferences, and access. Legal implications for control of push technology and data mining (collecting data about user preferences and not informing consumers of that fact), while not fully developed, will restrict collection of such priceless information.

Evaluation and case study also yields "actual practice" data as opposed to espoused or stated patterns of behavior. The case study information generated in this report yielded fascinating patterns of gender based preferences, PC based preferences, and browser based preferences. If a group of stakeholders were asked what computer, browser, and time of day they preferred for Internet access, the stated results may have been far different from actual field-collected data. This information may yield a true gold mine for PHE in designing future online Internet based curriculum and services.

At the present time, there is no standardized internal PHE mechanism for producing changes to the virtual community. This is because of staffing shortages, and the fact that the only experienced programmer at PHE left (for more money in Miami). PHE must deal with the issues of staff skill levels and somehow manage to train its own internal staff to utilize the new medium used by faculty and students. One formative committee member remarked that PHE's staff was the only roadblock to a successful virtual community. How PHE addresses this issue will in large part determine the success of it's virtual community.

The entire education center at FCAE is desperate for competent hardware, software, and development personnel. Never has there been such a time when so few skilled PC developers were available for so much work. At a local PC club meeting in Boca Raton, FL, developers were crowding into a small room to hear about Microsoft's new development platforms. At the same time, the very development companies at the meeting were desperately trying to find new skilled personnel for developing new client applications. The serious lack of skilled PC personnel will threaten whatever advances PHE and FCAE try to make in the near future. Perhaps PHE can "grow it's own talent" by in-house training and continuing education.

System models of web development appeared to work well in this study. The systems model lent itself well to development, evaluation, and pilot testing of electronic media. In the future, textbooks which detail how to develop curriculum for the web will become more popular than traditional books which detail developing paper-based models. As such, there is a real lack of current material.

Agile web communities are mandatory for attracting and holding customer's interest. Many comments were received about font size, colors, and placement of hypertext in the virtual community. Because the Internet is inter-active, customers can express preferences online and customize their own platforms. Virtual community developers must understand that the Internet is not static. Also, with the impending release of new development platform software, Microsoft has pointed the ways towards active server pages which are dynamic, not static. The web will become even more dynamic than it currently is now. Developers must take this into account when designing virtual communities.

Membership in the virtual community, although it must be voluntary, must also be "encouraged" so that community members will all have equal access to this new medium. If even one community member is left out because of lack of access skills, PHE will have failed in its vision to bring education to adults in a time and place convenient for adults.

Implications

As a result of this study, PHE has a new virtual community. A framework for developing additional material, and criteria for developing the material has been placed into service. Software tools for development have been purchased and placed on appropriate hardware platforms. Personnel have been trained in software development and maintenance of the virtual community. Stakeholders have been trained in the use of the virtual community.

Because PHE has established a web presence, it will have access to a greater share of desirable student populations. These students could be defined as adult students with access to the Internet who wish to pursue higher education in their spare time when it is appropriate for them. Figures from the case study data yielded the interesting result that Internet usage appears most popular after normal work hours. PHE may find itself delivering curriculum via the Internet at the hours between 6 P.M. and 12 P.M., instead of during weekends.

PHE will also through the retraining of its staff develop a new workforce with desirable job market skills. Employees will be able to secure better paying jobs because of the skill set acquired at PHE in dealing with the new virtual community. The conditions and indeed the definition of learning will have been altered forever at PHE as the Internet continues to deliver user customized curriculum content to its stakeholders.

The single most important implication of this study is that doctoral students of PHE will be enabled to improve their study, research, and collaboration skills via the use of the new virtual community. This should lead to a lowering of the drop-out rate for PHE students because of disenfranchisement (the original impetus of Petrozella's study) and increase the number of quality graduates from PHE. This will in turn improve the overall quality of programs for higher education in the United States as PHE contributes a great number of graduates yearly to this worthy group of colleagues.

The creation of a virtual community may also help reduce the number of drop-outs from the PHE program as the community will create a sense of belonging to members. Membership brings with it group identification and community identification of goals.

Recommendations

Recommendations for Implementation

The administration at PHE should continue building and testing the virtual community. All clusters should have a presence in the community. Whether this is accomplished locally or on the new FCAE server is negotiable. The point is to "just do it" and establish web presence's for all clusters individually.

The administration of PHE should train a second web developer as a back-up to the current developer. One developer cannot carry the workload this person will have to carry for the next two years as software is continually developed.

Software for web authoring should be distributed to all cluster administrators, faculty and staff. They should be encouraged to acquire new web authoring skills as though their careers depended upon it. They do.

The process for developing the web community should be continued. The virtual community must be maintained in order to grow. This means new rules, regulations, parts of the community, and new members. Just as a real community meets to determine civic matters, the virtual community should continue to meet to determine virtual matters. The community will stagnate without this sense of belonging to a developing presence. The literature review established that community members must feel a sense of belonging before they buy into new mediums such as the Internet.

PHE should consider creating a new program for administration, delivery and maintenance of curriculum via the Internet. The medium for delivering education at PHE currently (the jet plane) is outdated. Without a new marketing program for web education, PHE will not succeed against more sophisticated, technologically advanced programs (such as the University of Phoenix, Webster University, and so forth). The Internet makes classrooms obsolete.

Recommendations for Dissemination

All PHE faculty, staff, students, and stakeholders should be issued new FCAE web server accounts. All business functions now currently completed on papers should be transferred to the Internet (registration, submission of curriculum, and so forth). The leap to this new medium will take PHE approximately one - two years to complete. Because of the rapid acceleration of push technology and data mining, PHE has no time to waste. Every student it loses to competing universities because of lack of technology is $8,000.00 more per year PHE will lose in gross income. In the long run, PHE cannot survive without switching.

Recommendations for Further Research

The result of this study was the creation of a prototype virtual community for PHE. On-going studies can collect more quantitative data about the natural behavior and experiences of the community. It will become extremely important in the future to collect data mining information about customer preferences quickly, before legal restrictions are placed upon this marketing method. PHE must learn quickly what its user preferences are, and what its virtual web presence market is. It then must structure new programs to meet customer demand.

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APPENDIXES

Appendix A

Computer Lab Workshop Evaluation

Your position:

☐ PHE Student
☐ PHE Faculty or Administrator
☐ PHE Graduate

My selection of this workshop was influenced by:

☐ An administrator
☐ My peers
☐ Self-improvement
☐ My job
☐ Other reasons

Please circle the number that best reflects your level of agreement or disagreement with the statements below.

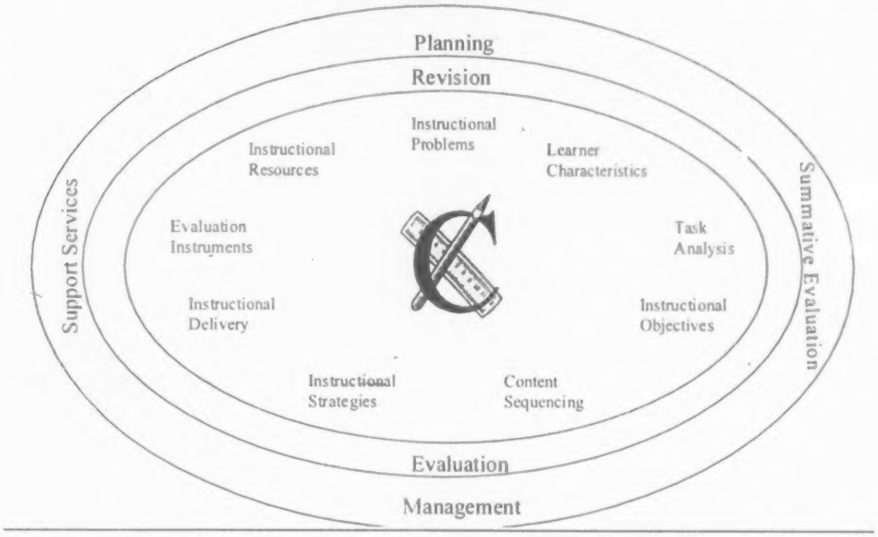
	Strongly Agree				Strongly Disagree
1. The objectives of this workshop were clearly stated.	5	4	3	2	1
2. The course materials were very useful.	5	4	3	2	1
3. The course content will help me perform my job.	5	4	3	2	1
4. The activities were relevant and useful.	5	4	3	2	1
5. The trainer was knowledgeable in the subject.	5	4	3	2	1
6. The trainer's presentation was effective.	5	4	3	2	1
7. The trainer encouraged class participation.	5	4	3	2	1
8. The training facilities were conductive to learning.	5	4	3	2	1

9. What was the most effective part of this workshop?______________________________
10. What was the least effective part?______________________________
11. How can this be improved? ______________________________

Appendix B

Systems Model for Web Page Development

Elements of the Instructional Design Plan



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Appendix C

Case Study Data Collection Form

Date:

Time:

IP Address:

Duration of web page usage, this session:

Repeat tries?

Comments from user?

Browser used?

Transaction successful?

Appendix D

PHE Criteria Review Committee

1. Administrative Assistant for Online and Database Information
2. Associate Director for Cluster Development and Marketing
3. Associate Director for Cluster Support and Student Services
4. Associate Director for Faculty and Curriculum Development
5. Associate Director for Research
6. Computing and Information Technology Professor
7. Coordinator, Administrative Operations
8. Program Dean, Programs for Higher Education

Appendix E

CIT Review Committee and Criteria

Committee

Academic Dean, Administrator of Educational Support, Associate Professor, Coordinator of Marketing, Director of MIS, MIS Instructor, and Program Director.

Criteria

1. Rules need to be drafted for the virtual community (virtual internet organization).
2. The community must be agile (it changes to react to customer needs)
3. The people who belong to the community (PHE) must get a sense of belonging from using the virtual community.
4. Allowing customers a self-service access concept to the virtual community should increase their use of it.
5. The use of the web site cannot be forced on community members. (They must want to use it because it meets an educational need).
6. Training must be offered at the summer institute to give members the sense they are capable of interacting with this new community adequately.
7. The training facility (summer institute) must reflect a real-world facility so that people feel they are trained in environments close to what they experience on the job and at home.
8. It should be assumed that at least 10 percent and possibly as high as 25 percent of virtual community users are computer phobic and should be trained to deal with this behavior phenomenon.
9. The web site should be simply designed to allow the fastest possible load times (two to five seconds per page at 14,400 BPS modems).
10. A pilot test should be conducted of the web site with at least two clusters to gather case study information (how do people react to this new medium)
11. A systems model for web page development should be used (Kemp or Dick and Carey).
12. The finished web site should be evaluated at the summer institute for evaluating whether it meets customer needs.
13. The web site should be developed on a Windows NT Advanced server with Windows Front Page '97 web authoring software.

Appendix F

PHE Virtual Web Community Pages

Welcome! FCAE PHE Virtual Community (Beta 1.04 Gold 6/15/97)

Welcome to Fischler Center for the Advancement of Education (FCAE) Programs for Higher Education (PHE). The purpose of this web is to enhance the support services we provide to our students. We've provided a number of resources here to help you register for classes online, resolve problems, report bugs, and suggest improvements to our services.

What is a virtual community? **Click here.**

[Bugs | Cluster Pages | Discussion | Download Study Guides | Faculty Pages | FAQ | MARP's | Online Curriculum]

[Portfolios | Practicums | Registration Pilot | Search This Website | Student Services | Suggestions | What's New]

The information on this page represents that of NSU PHE and not necessarily that of Nova Southeastern University. NSU PHE (Dr. Ross Moreton) takes full responsibility for the information presented. NSU is an equal opportunity educator and employer.

Questions or problems regarding this web site should be directed to tanyaw@fcae.acast.nova.edu.
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Last modified: Friday June 13, 1997.

NSU Home Page: http://www.nova.edu

FCAE Home Page: http://www.fcae.nova.edu

Appendix G

PHE Formative Committee

1. Aguerra@icanect.net
2. Alopezmuno@aol.com
3. Hellman@fcae.nova.edu
4. Ianr@hpd.nova.edu
5. Jjperez@compuserve.com
6. Jwdavis@buaxp1.barry.edu
7. Kaurtrip@fcae.acast.nova.edu
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14. Rosenfea@fcae.nova.edu
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17. Starn@polaris.acast.nova.edu
18. Tigraphics@earthlink.net
19. Zooic@aol.com

Appendix H

PHE Summative Committee

1. Alvarezb@fcae.nova.edu
2. Bartmann@fcae.acast.nova.edu
3. Benderd@fcae.acast.nova.edu
4. Davist@fcae.acast.nova.edu
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7. Genduso@fcae.acast.nova.edu
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20. Shamesj@fcae.acast.nova.edu
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22. Singlems@fcae.acast.nova.edu
23. Spahn@fcae.acast.nova.edu
24. Starr@fcae.acast.nova.edu
25. Tewelken@fcae.acast.nova.edu
26. Thomask@fcae.acast.nova.edu
27. Victors@fcae.acast.nova.edu

Appendix I

Qualitative Case Study Data

REGISTER Query

Remote Nam	Last Name	FName	Field82	Time	HTTP User Agent
129.37.229.14	Black	Ronald	5/26/97	10:43:02 A	Mozilla/3.0 (Win95; I)
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137.52.104.72	Johnson	Marilyn	6/02/97	10:37:24 A	Mozilla/1.22 (compatible; MSIE 2.0; Windows 95)
137.52.118.14	Starr	Neil	5/13/97	14:18:34 P	Mozilla/3.01Gold (Win95; I)
137.52.118.95	Robeson	Robert	5/12/97	11:59:42 A	Mozilla/3.0 (Win16; I)
137.52.200.63	Smith	Donald		01:33:20 A	Mozilla/3.0Gold (Win95; U)
137.52.200.68	Kaur	Tripat	5/15/97	15:23:13 P	Mozilla/3.0 (Win95; U)
				15:26:41 P	Mozilla/3.0 (Win95; U)
137.52.200.72	Gorman	Neil	5/11/97	09:07:38 A	Mozilla/2.0 (compatible; MSIE 3.01; Windows 95)
137.52.35.129	Blacktinton	Mary	5/12/97	16:25:58 P	Mozilla/1.22 (compatible; MSIE 2.0; Windows 95)
137.52.35.130	Ross	Ian		16:08:12 P	Mozilla/2.0 (compatible; MSIE 3.01; Windows 95)
137.52.35.135	Hellman	Madeleine	5/13/97	09:03:29 A	Mozilla/3.01 (Win95; I)
137.52.46.68	bleiweiss	alan	5/30/97	09:07:05 A	Mozilla/3.0Gold (Win95; I)
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			5/14/97	15:36:53 P	Mozilla/4.0 (compatible; MSIE 4.0b1; Windows N
			5/19/97	11:39:05 A	Mozilla/4.0 (compatible; MSIE 4.0b1; Windows N
137.52.72.122	Ba	Ousmane		16:01:24 P	Mozilla/3.01Gold (Win95; I)
				16:12:06 P	Mozilla/3.01Gold (Win95; I)
	Kaur	Tripat		11:57:43 A	Mozilla/3.01Gold (Win95; I)
	Walker	Tanya	4/30/97	15:45:04 P	Mozilla/2.0 (compatible; MSIE 3.01; Windows 95)
			5/08/97	14:18:33 P	Mozilla/2.0 (compatible; MSIE 3.01; Windows 95)
			5/12/97	14:26:17 P	Mozilla/3.01Gold (Win95; I)
152.163.195.3	Zadak	Aimee	5/27/97	22:58:53 P	Mozilla/2.0 (Compatible; AOL-IWENG 3.0; Win16
				23:11:42 P	Mozilla/2.0 (Compatible; AOL-IWENG 3.0; Win16
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				19:27:27 P	Mozilla/3.0 (Win95; U)
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153.34.130.28	Lazo	Louis	5/17/97	14:15:34 P	Mozilla/2.0 (compatible; MSIE 3.02; MSN 2.0; Wi
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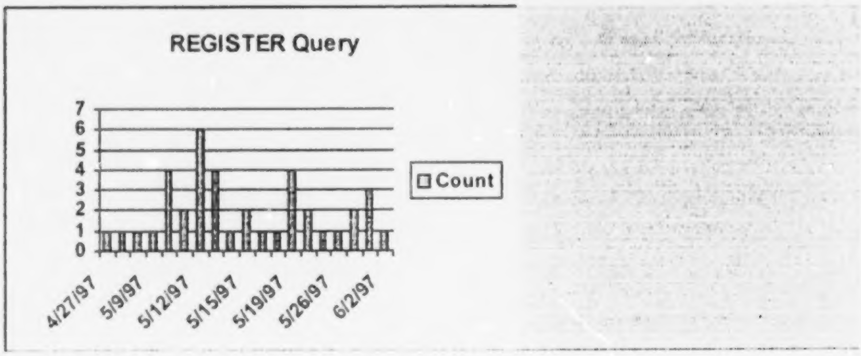

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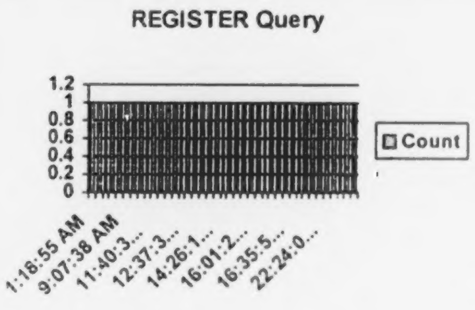

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INFOREQ Query1

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	Joyner	Alice		09:28:53 AM	Mozilla/2.02 (Win95; I; 16
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		MARY		21:33:32 PM	Mozilla/3.0 (Win95; I; 16bi
				21:40:42 PM	Mozilla/3.0 (Win95; I; 16bi
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				07:37:45 AM	Mozilla/2.0 (compatible; M
137.52.224.1	Cable	Susan	4/10/97	19:13:36pm	Lynx/2.3.1
	Crews	Derek	3/21/97	20:10:59 pm	Lynx/2.3.1
	Gigliello	Barbara	4/20/97	14:32:06 pm	Lynx/2.3.1
	H.	Mas	6/03/97	21:39:01 PM	Lynx/2.3.1 BETA libwww/
	Lopez	Linda	5/22/97	12:08:41 PM	Lynx/2.3.1
	Luskay	Maria	3/25/97	22:10:06 PM	Lynx/2.3.1
	Malone	Joy	5/24/97	17:58:02 PM	Lynx/2.3.1
	Mas	Deborah	6/03/97	21:32:01 PM	Lynx/2.3.1 BETA libwww/
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	McLeod	Stephen	3/24/97	21:44:02 PM	Lynx/2.3.1 BETA libwww/
	Pietrovito	Director, Qual	5/21/97	21:19:42 PM	Lynx/2.3.1 BETA libwww/
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	Remington	David	5/01/97	14:20:07 PM	Lynx/2.3.1
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	Villa	Rene	5/20/97	22:18:07 PM	Lynx/2.3.1
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				22:38:34 PM	Lynx/2.3.1
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				16:54:56 PM	Mozilla/3.01 (Win95; I)

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ip address	lname	fname	datesubmitt	timesubmitted	brownser used
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137.52.70.20	Domino	John	5/29/97	16:26:57 PM	Mozilla/2.0 (compatible; M
	watkins		5/28/97	14:12:15 PM	Mozilla/2.0 (compatible; M
		tes test test	5/05/97	14:37:57 PM	Mozilla/4.0 (compatible; M
		test	5/30/97	12:00:35 PM	Mozilla/2.0 (compatible; M
		test test test,	5/05/97	14:26:57 PM	Mozilla/4.0 (compatible; M
		watkins		09:23:23 AM	Mozilla/4.0 (compatible; M
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	Ake	Barbara	5/05/97	09:42:13 AM	Mozilla/3.01Gold (Win95;
	Barrett	Anita	6/03/97	11:20:00 AM	Mozilla/3.01Gold (Win95;
	Beall	Elizabeth	4/28/97	11:47:20 AM	Mozilla/3.01Gold (Win95;
	Beasley-Poke	Zanita	4/22/97	16:18:53 PM	Mozilla/3.01Gold (Win95;
	Bienvenue	Donald	4/24/97	09:47:40 AM	Mozilla/3.01Gold (Win95;
	Bishop	William	6/02/97	11:19:45 AM	Mozilla/3.01Gold (Win95;
	Brinkley	Jeff	5/12/97	09:46:21 AM	Mozilla/3.01Gold (Win95;
	Brown	Daniel	4/24/97	15:37:05 PM	Mozilla/3.01Gold (Win95;
	Brueshoff	David	4/01/97	10:37:17 AM	Mozilla/3.01Gold (Win95;
	Bunn	Barry	3/24/97	11:27:41 AM	Mozilla/3.01Gold (Win95;
	Chen-Ramire	Elaine	4/16/97	13:18:58 PM	Mozilla/3.01Gold (Win95;
	Christensen	Carl	4/28/97	14:17:24 PM	Mozilla/3.01Gold (Win95;
	Clay	Antoinette	4/23/97	09:41:11 AM	Mozilla/3.01Gold (Win95;
	Crews	Derek	3/25/97	09:21:00 AM	Mozilla/3.01Gold (Win95;
				09:22:28 AM	Mozilla/3.01Gold (Win95;
	Cudney	Bruce	4/14/97	11:30:05 AM	Mozilla/3.01Gold (Win95;
	Daniel-Platt	Mariah	4/22/97	15:10:46 PM	Mozilla/3.01Gold (Win95;
	Dopplefeld	Dieter	4/04/97	11:24:19 AM	Mozilla/3.01Gold (Win95;
	Gisondi	Judi	4/01/97	16:12:00 PM	Mozilla/3.01Gold (Win95;
	Goodson	Marjorie	5/30/97	16:12:17 PM	Mozilla/3.01Gold (Win95;
	Holland	Cecil	3/24/97	12:24:45 PM	Mozilla/3.01Gold (Win95;
	Hunt	Ernest	4/17/97	09:59:22 AM	Mozilla/3.01Gold (Win95;
	Jaeger	Janet	4/09/97	09:47:08 AM	Mozilla/3.01Gold (Win95;
				09:48:17 AM	Mozilla/3.01Gold (Win95;
	Kintzer	Frederick	4/28/97	12:55:17 PM	Mozilla/3.01Gold (Win95;
	Love	Burshell	4/24/97	11:07:12 AM	Mozilla/3.01Gold (Win95;
	Martin	Sandra	5/20/97	10:29:39 AM	Mozilla/3.01Gold (Win95;
	Martz	David	5/23/97	09:20:30 AM	Mozilla/3.01Gold (Win95;
	Mastricola	Rose Marie	4/16/97	09:54:45 AM	Mozilla/3.01Gold (Win95;
	Metcalf	Kimberly	4/24/97	15:39:57 PM	Mozilla/3.01Gold (Win95;
	Morgan	John	5/29/97	16:18:42 PM	Mozilla/3.01Gold (Win95;
	Naret	Shirley	3/25/97	16:41:48 PM	Mozilla/3.01Gold (Win95;
	Olbryf	Kathleen	4/07/97	11:17:27 AM	Mozilla/3.01Gold (Win95;

ip address	lname	fname	datesubmitt	timesubmitted	brownser used
137.52.72.11	Ragsdale	Keith	5/08/97	14:37:04 PM	Mozilla/3.01Gold (Win95;
	Ricci	Lois .	5/05/97	10:45:50 AM	Mozilla/3.01Gold (Win95;
	Riggins	Judith	4/17/97	09:56:02 AM	Mozilla/3.01Gold (Win95;
	Rosen	Denise	3/27/97	16:35:20 PM	Mozilla/3.01Gold (Win95;
	Roux	Michael	3/25/97	16:38:05 PM	Mozilla/3.01Gold (Win95;
	Strauss	Lawrence	3/18/97	15:04:28 PM	Mozilla/3.01Gold (Win95;
	Stromp	Lalanda	5/14/97	11:33:33 AM	Mozilla/3.01Gold (Win95;
	Tapp	Mamie	5/30/97	16:09:07 PM	Mozilla/3.01Gold (Win95;
	Thompson	Angela	5/09/97	16:34:48 PM	Mozilla/3.01Gold (Win95;
	Torbenson	Susan	4/22/97	15:48:20 PM	Mozilla/3.01Gold (Win95;
	Townley	Debora	5/20/97	08:55:31 AM	Mozilla/3.01Gold (Win95;
	Wilson	Nathaniel	5/21/97	14:28:44 PM	Mozilla/3.01Gold (Win95;
	Woodland	Barbara	6/03/97	11:17:41 AM	Mozilla/3.01Gold (Win95;
137.52.72.11	watkins	oooo	3/31/97	14:31:23 PM	Mozilla/3.01Gold (Win95;
137.52.72.11	Ba	Ousmane	4/28/97	16:21:52 PM	Mozilla/3.01Gold (Win95;
	Blake	Billie	5/22/97	13:38:55 PM	Mozilla/3.01Gold (Win95;
	Bottiglieri	Patrick	4/22/97	09:21:32 AM	Mozilla/3.01Gold (Win95;
	Drummond	Brenda	4/30/97	16:36:19 PM	Mozilla/3.01Gold (Win95;
	Holton	Judith	5/01/97	15:46:41 PM	Mozilla/3.01Gold (Win95;
	Lauria-Davis	Marian	4/04/97	16:47:22 PM	Mozilla/3.01Gold (Win95;
	Lundy	Gina	4/23/97	13:34:38 PM	Mozilla/3.01Gold (Win95;
	Robeson	Andrew	3/20/97	14:31:32 PM	Mozilla/3.01Gold (Win95;
	Scott	Hyacinth	3/31/97	13:25:58 PM	Mozilla/3.01Gold (Win95;
	Vance	Sandra	5/20/97	10:23:35 AM	Mozilla/3.01Gold (Win95;
	Williams	Glenn	5/19/97	13:26:12 PM	Mozilla/3.01Gold (Win95;
137.52.72.12	Walker	Tanya	4/28/97	14:36:17 PM	Mozilla/2.0 (compatible; M
137.52.72.12	Bishop, Jr.	Park	3/24/97	13:37:49 PM	Mozilla/3.01Gold (Win95;
	Blake	Billie		09:18:55 AM	Mozilla/3.01Gold (Win95;
	Bonando	Jon	5/28/97	09:34:50 AM	Mozilla/3.01Gold (Win95;
	Bornhorst	Irene	5/20/97	10:17:06 AM	Mozilla/3.01Gold (Win95;
	Capps	David	4/08/97	15:50:47 PM	Mozilla/3.01Gold (Win95;
	Daum	Sarah	4/14/97	13:43:26 PM	Mozilla/3.01Gold (Win95;
	Delaneuville	Delphine	5/21/97	13:02:20 PM	Mozilla/3.01Gold (Win95;
	Denhard	Leslie	3/31/97	16:38:11 PM	Mozilla/3.01Gold (Win95;
	Edwards	Susan	4/08/97	15:47:53 PM	Mozilla/3.01Gold (Win95;
	Fair	Lori	3/31/97	11:42:40 AM	Mozilla/3.01Gold (Win95;
	Gentry	Maudia	4/02/97	13:36:08 PM	Mozilla/3.01Gold (Win95;
	Hart	Michael	5/28/97	12:11:42 PM	Mozilla/3.01Gold (Win95;
	Jones	Carol	3/31/97	10:26:57 AM	Mozilla/3.01Gold (Win95;
	Kelly	Partricia	4/18/97	10:55:09 AM	Mozilla/3.01Gold (Win95;
	Lepke	Helen	5/28/97	09:30:43 AM	Mozilla/3.01Gold (Win95;
	Little	Alfred	4/14/97	13:54:42 PM	Mozilla/3.01Gold (Win95;

ip address	lname	fname	datesubmitt	timesubmitted	brownser used
137.52.72.12	Petrozella	Olga	4/14/97	13:52:03 PM	Mozilla/3.01Gold (Win95;
	Sparks	Leroy	4/18/97	10:51:39 AM	Mozilla/3.01Gold (Win95;
	Tin	Kenneth	5/20/97	10:11:00 AM	Mozilla/3.01Gold (Win95;
	Torsiello	Roseann	4/01/97	13:52:54 PM	Mozilla/3.01Gold (Win95;
137.52.72.12	Anderson	Mark		11:16:50 AM	Mozilla/3.01Gold (Win95;
	Freckleton	Deborah	3/20/97	14:05:53 PM	Mozilla/3.01Gold (Win95;
137.52.72.12	Young	Gloria	4/04/97	13:18:42 PM	Mozilla/3.01 (Win95; I)
137.52.74.13	Padgett	Ervin	4/19/97	11:48:27 AM	Mozilla/3.01Gold (Win95;
138.123.240.	Davenport	Anita	4/22/97	12:45:47 PM	Mozilla/1.22 (Windows; I;
				12:46:47 PM	Mozilla/1.22 (Windows; I;
138.123.68.8	DeLoache	Khadija	4/23/97	17:33:14 PM	Mozilla/1.22 (Windows; I;
				17:33:45 PM	Mozilla/1.22 (Windows; I;
140.198.105.	Mills	Karen	4/12/97	18:42:47 PM	Mozilla/3.01 (Macintosh; I;
				18:49:52 PM	Mozilla/3.01 (Macintosh; I;
140.198.17.1	Wells	Sandra	5/30/97	15:17:58 PM	Mozilla/3.0Gold (Macintos
140.198.18.1	Betsy	Frank	4/21/97	19:08:35 PM	Mozilla/1.12(Macintosh; I;
	Frank	Betsy		19:09:50 PM	Mozilla/1.12(Macintosh; I;
140.198.18.1	Gibney	Marian	5/15/97	17:15:19 PM	Mozilla/2.02 (Macintosh; I;
140.198.19.6	Walters	James	4/23/97	23:17:05 PM	Mozilla/4.0b2 (Win95; I)
140.198.19.7			5/30/97	20:41:33 PM	Mozilla/3.01 (Win95; U)
				20:45:16 PM	Mozilla/3.01 (Win95; U)
140.198.6.73	Rooney		4/28/97	16:16:54 PM	Mozilla/3.01 (Macintosh; I;
		Michael		16:15:03 PM	Mozilla/3.01 (Macintosh; I;
				16:21:25 PM	Mozilla/3.01 (Macintosh; I;
141.240.231.	Williams, Jr.	Gordon	5/20/97	07:04:30 AM	Mozilla/3.01 (Win16; U)
142.99.16.3	Bassendowsk	Sandra		15:40:17 PM	Lynx/2.3.1
143.132.1.13	Baker-Brando	Linda	4/02/97	10:19:49 AM	Lynx/2.3.7 BETA libwww/
	Brandon			10:02:15 AM	Lynx/2.3.7 BETA libwww/
	Holmes	John	4/01/97	10:31:24 am	Lynx/2.3.7
				10:40:48 AM	Lynx/2.3.7 BETA libwww/
144.30.6.208	anonymous		3/31/97	17:35:06 PM	Mozilla/3.0Gold (Win95; I)
146.186.16.3	Varcoe	Kenneth	4/27/97	11:19:09 AM	Mozilla/3.0 (Macintosh; I;
147.134.137.	Scheirton	Linda	5/14/97	14:15:29 PM	Mozilla/3.0 (Win95; I)
	Welie	Jozef		13:59:10 PM	Mozilla/3.0 (Win95; I)
149.152.103.	Whelan	Melissa	4/02/97	20:21:12 PM	Mozilla/3.0 (Macintosh; I;
149.152.40.7		Patricia	4/03/97	16:16:33 PM	Mozilla/1.1N (Macintosh; I
150.160.44.2	Miller	Molly	3/27/97	09:58:11 AM	Lynx/2.6 libwww-FM/2.14
150.160.44.2				10:23:14 AM	Lynx/2.6 libwww-FM/2.14
				10:25:22 AM	Lynx/2.6 libwww-FM/2.14
150.174.254.	Cook	Lynn	3/20/97	16:26:35 PM	Mozilla/3.0 (Win95; I)
			3/26/97	16:12:26 PM	Mozilla/3.0 (Win95; I)
151.141.7.18	Ellis	Steve	3/19/97	11:38:00 AM	Mozilla/3.01Gold (Win95;

ip address	lname	fname	datesubmitt	timesubmitted	brownser used
152.11.214.1	Crandall	Sonia	4/29/97	11:07:40 AM	Mozilla/3.01Gold (WinNT;
152.163.194.	Gutekunst	Beryl	5/09/97	15:40:02 PM	Mozilla/2.0 (Compatible; A
				15:47:51 PM	Mozilla/2.0 (Compatible; A
	Hill	Robert	5/17/97	16:00:43 PM	Mozilla/2.0 (Compatible; A
152.163.197.	Richardson	Drew	4/28/97	17:00:58 PM	Mozilla/2.0 (Compatible; A
152.163.197.	Rossman	Mark		12:08:43 PM	Mozilla/2.0 (Compatible; A
				12:11:31 PM	Mozilla/2.0 (Compatible; A
				12:13:51 PM	Mozilla/2.0 (Compatible; A
152.163.205.	Morrison	William	5/14/97	16:01:31 PM	Mozilla/2.0 (Compatible; A
				16:02:09 PM	Mozilla/2.0 (Compatible; A
152.163.205.	Yasaian	Joseph	4/20/97	22:38:19 PM	IWENG/1.2.003
				22:43:15 PM	IWENG/1.2.003
152.163.205.	Faulcon-Dixo	Carolyn	4/07/97	01:46:28 AM	Mozilla/2.0 (compatible; M
	Trogdon		4/25/97	18:32:12 PM	Mozilla/2.0 (Compatible; A
				18:35:51 PM	Mozilla/2.0 (Compatible; A
		John		18:29:10 PM	Mozilla/2.0 (Compatible; A
				18:30:21 PM	Mozilla/2.0 (Compatible; A
				18:36:15 PM	Mozilla/2.0 (Compatible; A
152.163.205.	Kindel	Dawn	4/20/97	12:09:45 PM	Mozilla/2.0 (compatible; M
				12:10:04 PM	Mozilla/2.0 (compatible; M
	Rosa	Karon	3/26/97	12:50:37 PM	Mozilla/2.0 (Compatible; A
152.163.206.	Ryan	G.	5/01/97	12:43:18 PM	IWENG
152.163.206.	BILLER	JERRY	4/27/97	01:36:45 AM	Mozilla/2.0 (compatible; M
152.163.213.	Anderson	Carol Lynn	5/31/97	15:52:10 PM	Mozilla/2.0 (Compatible; A
152.163.231.	Blenkiron	Patricia	3/24/97	19:03:40 PM	Mozilla/2.0 (Compatible; A
152.163.231.	Davis	Jean	3/21/97	23:23:43 pm	Mozilla/2.0
				23:28:46 PM	Mozilla/2.0 (compatible; A
		Sylvester	3/25/97	10:01:33 AM	Mozilla/2.0 (Compatible; A
				10:03:54 AM	Mozilla/2.0 (Compatible; A
	poirier	john	4/21/97	20:38:14 PM	Mozilla/2.0 (Compatible; A
152.163.231.	Musolino	Gina	3/15/97	13:13:21 PM	Mozilla/2.0
	Smith	Jenita	4/29/97	21:34:38 PM	Mozilla/2.0 (compatible; M
152.163.231.	Davis	Jean	4/16/97	21:06:16 PM	Mozilla/2.0 (compatible; A
152.163.231.	Blenkiron	Patricia	3/28/97	18:45:55 PM	Mozilla/2.0 (Compatible; A
	Meek	Edmee	3/29/97	23:43:33 PM	Mozilla/2.0 (Compatible; A
152.163.231.	Demetrius	Beverley	3/24/97	21:43:07 PM	Mozilla/2.0 (Compatible; A
152.163.233.	Zylak		4/03/97	11:10:00 AM	IWENG/1.2.003
		JoAnn	4/19/97	17:00:30 PM	IWENG/1.2.003
152.163.233.	Pullen	Richard		09:28:32 am	IVVENG/1.2.003
152.163.233.	Davis	Sylvester	3/24/97	20:22:35 PM	Mozilla/2.0 (Compatible; A
152.163.233.	Sabatini	Margaret	3/22/97	13:04:34 PM	Mozilla/2.0 (Compatible; A
				13:05:52 PM	Mozilla/2.0 (Compatible; A

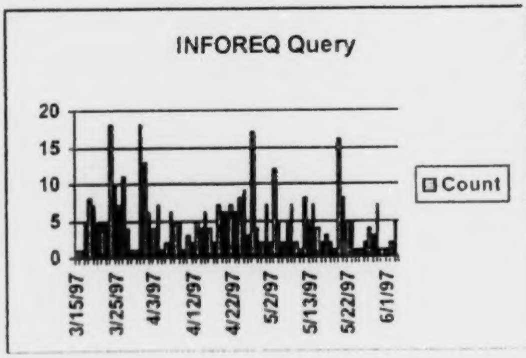
ip address	lname	fname	datesubmitt	timesubmitted	brownser used
152.163.233.	Chapman	Paula	3/31/97	14:06:48 PM	Mozilla/2.0 (Compatible; A
152.163.237.	Cody	Gilbert	4/11/97	23:00:11 PM	Mozilla/2.0 (Compatible; A
	Hamstead	Margaret	3/24/97	07:42:11 AM	Mozilla/2.0 (Compatible; A
152.163.237.	McKeefery	Ruth	4/28/97	16:07:15 PM	Mozilla/2.0 (compatible; M
				16:09:52 PM	Mozilla/2.0 (compatible; M
152.163.237.	KAMINSKY	GREG	4/09/97	16:35:54 PM	Mozilla/2.0 (Compatible; A
152.163.237.	Demetrius	Beverley	3/24/97	21:37:11 PM	Mozilla/2.0 (Compatible; A
152.163.237.	Mahoney War	Gail	3/25/97	10:17:37 AM	Mozilla/2.0 (Compatible; A
	Saunders	Rosemary	3/26/97	07:44:21 AM	Mozilla/2.0 (Compatible; A
152.163.237.	Mallory	Linda	3/17/97	20:43:00 PM	Mozilla/2.0 (Compatible; A
152.33.17.14	Fulkerson	Christopher	3/18/97	14:00:25 PM	Mozilla/2.0 (Macintosh; I;
152.43.32.19	Zeiss	P.	5/15/97	13:01:54 PM	Mozilla/3.0 (Win95; U)
152.43.32.44	Launt	Jonathan	3/20/97	10:59:53 AM	Mozilla/3.0 (Win95; U)
	Zollinger	Richard		10:04:10 AM	Mozilla/3.0 (Win95; U)
153.34.117.1	Loughren	Patricia	4/24/97	10:09:33 AM	Mozilla/2.0 (compatible; M
153.34.117.1	Chester	Sally	3/31/97	19:24:10 PM	Mozilla/2.0 (compatible; M
153.34.119.1	Lovallo	Thea	4/04/97	21:36:24 PM	Mozilla/3.01 (Win95; I)
153.34.130.1	Lazo	Louis	3/26/97	10:11:20 AM	Mozilla/2.0 (compatible; M
153.34.130.5	Gordon	J. Robert	3/24/97	16:20:03 PM	Mozilla/2.0 (compatible; M
				16:21:03 PM	Mozilla/2.0 (compatible; M
153.34.153.1	Carlson		5/10/97	08:27:57 AM	Mozilla/3.0-C-NSCP (Maci
		Daniel		08:25:57 AM	Mozilla/3.0-C-NSCP (Maci
153.34.206.1	Brantley	Wayne	6/01/97	21:31:54 PM	Mozilla/1.22 (compatible;
153.35.225.1	Gissel	Richard	3/24/97	01:10:12 AM	Mozilla/3.01 (Win95; I)
155.91.1.100	Chabra	Thomas	4/02/97	15:40:10 PM	
159.218.4.5	Davis	Michael	5/02/97	11:45:33 AM	Mozilla/3.01 (Win16; I)
				11:49:21 AM	Mozilla/3.01 (Win16; I)
164.106.90.3	Kiah	Carmon	4/28/97	11:13:20 AM	Mozilla/3.0 (Win95; I)
				11:14:39 AM	Mozilla/3.0 (Win95; I)
167.192.40.4	Curtis	Karen	5/23/97	15:52:19 PM	Mozilla/2.0 (Win16; I)
168.26.197.1	Chang	David	3/27/97	14:05:12 PM	Mozilla/3.0 (Win16; I)
169.207.69.1	Herzer	Kim	5/01/97	21:39:52 PM	Mozilla/3.0 (Win95; U)
169.207.8.16	GOODNETTE	MARTHA	4/07/97	01:16:53 AM	Mozilla/3.0 (Win95; I)
169.226.40.9	Robbins	Cornelius	5/08/97	08:47:17 AM	Mozilla/3.0Gold (Win16; I)
192.120.250.	Pullen	Richard	4/04/97	15:14:19 PM	Mozilla/3.01 (Win16; I)
192.204.50.2	Liotta-Kleinfel	Lorry	4/17/97	18:32:12 PM	Mozilla/2.01 (Win95; I)
192.217.9.24	Vernon	Sally	5/01/97	19:58:04 PM	Mozilla/3.0 (Win95; I)
				20:01:23 PM	Mozilla/3.0 (Win95; I)
192.220.193.	Paulauskis	Gregory	3/27/97	10:19:29 AM	Mozilla/2.0 (Win16; I)
198.133.170.	Haqq	Khalida	4/28/97	22:12:27 PM	Mozilla/2.0 (Win16; I)
198.150.167.	Karl	Luis	4/15/97	13:39:19 PM	Mozilla/2.0 (Win16; I)
198.150.168.	Baron	Bruce	4/17/97	13:12:21 PM	Mozilla/2.0 (Win16; I)

ip address	lname	fname	datesubmitt	timesubmitted	brownser used
198.150.177.	Mishler	Carol	3/27/97	16:48:25 PM	Mozilla/1.1N (Windows, I;
				16:51:11 PM	Mozilla/1.1N (Windows; I;
198.150.81.1	Ewing	Glenna	4/04/97	17:28:52 PM	Mozilla/3.01 (Win16; I)
				17:32:45 PM	Mozilla/3.01 (Win16; I)
198.183.177.	Kole	James	4/29/97	18:54:11 PM	Mozilla/3.0Gold (Macintos
198.211.210.	ANDERSON	DONNA	5/03/97	12:54:12 PM	Mozilla/3.01 (Win95: I) vi
	Espinosa- Par	Norma		12:56:11 PM	Mozilla/3.01 (Win16; I) vi
	HAMS	JAMES		11:24:17 AM	Mozilla/3.01 (Win95: I) vi
	PORTIS	EVELYN		12:59:27 PM	Mozilla/3.01 (Win95; I) vi
198.214.254.	Clark	Douglas	5/22/97	11:41:08 AM	Mozilla/3.0Gold (Macintos
198.248.37.2	Sapp		4/03/97	10:38:19 AM	Mozilla/3.01Gold (Macinto
		Jerri		10:36:18 AM	Mozilla/3.01Gold (Macinto
198.250.153.	Wright	Edward	5/09/97	11:27:07 AM	Mozilla/1.22 (compatible;
198.60.186.1	Lee		4/15/97	11:26:22 AM	Mozilla/2.02 (Macintosh; I;
		Ingrid		11:25:11 AM	Mozilla/2.02 (Macintosh; I;
				11:28:56 AM	Mozilla/2.02 (Macintosh: I;
			4/16/97	20:01:40 PM	Mozilla/2.02 (Macintosh; I;
198.85.204.5	Phillips	Linda	5/20/97	16:42:51 PM	Mozilla/3.0Gold (Win95: I)
198.86.121.9	Bryant	Donald	5/03/97	11:30:39 AM	Mozilla/3.01Gold (Win95;
199.1.131.11	Wilson	Charles	3/19/97	10:05:49 AM	Mozilla/2.0 (compatible; M
199.104.226.	Jantz	Neville	4/01/97	14:30:21 PM	Mozilla/2.01Gold (Win95;
199.170.84.3	Shisler	Clifford	5/12/97	11:33:49 AM	Mozilla/3.01 (Win16; I)
199.174.193.	Stutte	Lorilee	3/27/97	14:02:30 PM	Mozilla/2.0 (compatible; M
199.174.233.	Achinanya	Fidelis	3/17/97	19:23:50 PM	SPRY_Mosaic/v8.24 (Win
199.183.42.1	Lang	Richard	3/21/97	08:53:48 AM	Mozilla/2.01KIT (Win16; U
199.222.14.2	Kirk		3/18/97	09:08:10 AM	Mozilla/3.01 (Win16; I)
		Terry		09:06:56 AM	Mozilla/3.01 (Win16; I)
199.232.252.	Fuller	Elizabeth	4/05/97	20:03:04 PM	Mozilla/3.01 (Win95; I)
199.31.3.33	Daugherty	Donald	4/14/97	15:51:45 PM	Mozilla/1.22 (compatible;
199.45.201.2	Epstein	Alice	3/28/97	17:30:55 PM	Mozilla/2.0
				17:33:04 PM	Mozilla/2.0 (compatible; M
199.77.66.9	Guillette	Mark	3/24/97	01:10:25 AM	Mozilla/2.0 (compatible; M
199.78.240.3	Devine	Sara	4/23/97	19:58:03 PM	Mozilla/2.0 (Win95; U)
199.78.64.10	Balon		5/27/97	08:02:38 AM	Mozilla/2.02 (Win16; I)
		Michelle		08:01:33 AM	Mozilla/2.02 (Win16; I)
204.102.67.9	cantrell	Eloise	5/09/97	12:18:05 PM	Mozilla/2.0 (compatible; M
204.114.51.7	Weinrub	Edith	3/27/97	09:57:56 AM	Mozilla/3.01 (Win95; I)
204.130.172.	Harris	Richard	4/25/97	19:10:37 PM	Mozilla/3.0 (Win95; I; 16bi
	Morley			19:11:59 PM	Mozilla/3.0 (Win95; I; 16bi
		Brian	5/17/97	17:18:26 PM	Mozilla/3.0 (Win16; I) via
204.154.81.2	Knowles	Harley	5/20/97	17:07:49 PM	Mozilla/3.01Gold (Win95;
			5/29/97	10:54:53 AM	Mozilla/3.01Gold (Win95;

ip address	lname	fname	datesubmitt	timesubmitted	brownser used
204.164.188.	Crowley	Michael	4/25/97	10:22:11 AM	Mozilla/3.0Gold (Win95; I)
204.171.126.	Calabrese	Paula	5/20/97	13:21:27 PM	Mozilla/3.01Gold (Win95;
204.177.124.	Tyre	Dianne	4/07/97	09:18:27 AM	Mozilla/3.01 (Win95; I)
204.181.183.	Madere	Jerrelyn		23:52:58 PM	Mozilla/3.01Gold (Win95;
204.228.28.1	Shults	David	3/25/97	18:10:38 PM	Mozilla/3.0Gold (Win16; I)
204.229.203.	Davis	Richard	4/09/97	12:44:34 PM	Mozilla/2.01 (Macintosh; I;
204.32.178.1	Gramza	Ronald	4/02/97	14:53:10 PM	Mozilla/3.0C-NC320 (Win
204.33.149.1	Busché	Don	5/03/97	01:37:16 AM	Mozilla/2.02 (Win95; I)
	Green	Patricia		13:03:21 PM	Mozilla/2.02 (Win95; I)
	Lee	Ralph		11:24:55 AM	Mozilla/2.02 (Win95; I)
	Thompson	Jane		12:54:48 PM	Mozilla/2.02 (Win95; I)
	Zeigler	Terry		17:56:31 PM	Mozilla/2.02 (Win95; I)
204.5.43.192	Turan	Jack	5/14/97	09:38:39 AM	Mozilla/2.0 (Win16; I)
204.57.138.6	Bangs	Leilani	3/19/97	10:34:40 AM	Mozilla/3.0 (Win95; I)
204.60.13.7	Loiseau	Heidi	5/13/97	17:44:38 PM	Mozilla/3.01C-SNET (Win
204.62.32.24	Holland	Gloria	3/31/97	14:47:45 PM	Mozilla/2.02 (Win16; I)
205.130.242.	Kierstead	Thomas	5/18/97	09:42:53 AM	Mozilla/3.01Gold (Win95;
205.167.14.3	DiCiacca	Michael	5/13/97	14:50:40 PM	Mozilla/2.0 (Win16; I)
205.184.138.	Niesiobedzki	Andrew	5/06/97	08:54:19 AM	Mozilla/2.0 (compatible; M
				08:55:06 AM	Mozilla/2.0 (compatible; M
205.186.170.	Harvey	Joe	3/24/97	18:31:32 PM	NETCOMplete/3.2
205.197.177.	Wilkins	Diana	4/30/97	17:17:26 PM	Mozilla/3.01 (Win95; I)
205.206.192.	Keng	Govan	4/27/97	01:23:59 AM	Mozilla/1.22 (Windows; I;
205.212.64.8	Moss	Mary	5/20/97	07:59:02 AM	Mozilla/2.0 (Win95; U)
				08:00:01 AM	Mozilla/2.0 (Win95; U)
205.213.143.	Holloway		5/23/97	10:23:59 AM	Mozilla/2.01 (Win16; I)
		Mary-Lou		10:22:46 AM	Mozilla/2.01 (Win16; I)
				10:27:33 AM	Mozilla/2.01 (Win16; I)
205.214.203.	Carty	Lincoln	5/14/97	16:26:55 PM	Mozilla/2.0 (compatible; M
205.216.79.5	Abare, Jr.	William	4/16/97	16:25:56 PM	Mozilla/3.01 (Win16; I)
205.219.186.	Watts	Dennis	3/21/97	19:39:47 PM	Mozilla/3.0 (Win95; U)
205.244.169.	Ploener	Francis	4/01/97	15:54:23 PM	Mozilla/2.0 (compatible; M
205.244.169.	Angulo	Susan	3/26/97	16:16:37 PM	Mozilla/1.22 (Windows; I;
				16:16:54 PM	Mozilla/1.22 (Windows; I;
206.100.249.	Belcak Sr.	Michael	3/18/97	08:42:25 AM	Mozilla/2.0 (compatible; M
206.102.214.	Lawes	Annette	5/08/97	22:12:18 PM	Mozilla/2.02 (Win16; I)
				22:23:38 PM	Mozilla/2.02 (Win16; I)
206.144.64.3	Brickle	Colleen	5/13/97	09:01:46 AM	Mozilla/3.0 (Win16; I)
206.146.145.	Graham			21:24:25 PM	Mozilla/3.0 (Win16; U)
		Charlotte		21:23:21 PM	Mozilla/3.0 (Win16; U)
206.175.217.	watkins	diana	3/28/97	21:00:26 PM	SPRY_Mosaic/v8.32 (Win
206.184.56.7	Sagan	Harold	3/19/97	23:23:09 PM	Mozilla/2.01 (Win95; I; 16

ip address	lname	fname	datesubmitt	timesubmitted	brownser used
206.184.56.7	Sagan	Harold	3/19/97	23:26:51 PM	Mozilla/2.01 (Win95; I; 16
206.219.70.1	SHAH	LALIT	4/08/97	22:24:18 PM	Mozilla/3.01Gold (Win95;
206.228.238.	Stein	Kenneth	4/07/97	03:56:30 AM	Mozilla/2.02 (Win16; I)
206.233.12.1	Boellner	Joanne	3/25/97	13:46:02 PM	Mozilla/2.02 (Win16; I)
206.242.203.	Redman	Terry	3/18/97	10:35:01 AM	Mozilla/2.0 (compatible; M
206.251.162.	Ouder	Cliff	4/24/97	18:04:18 PM	Mozilla/3.01C-KIT (Win95
		EddyAnne		18:10:14 PM	Mozilla/3.01C-KIT (Win95
206.27.238.6	Byrd	Herman	4/19/97	18:29:36 pm	SPRY_Mosaic
				18:37:26 pm	SPRY_Mosaic
				18:42:38 PM	SPRY_Mosaic/v7.36 (Win
206.32.6.20	Smith-Osrow	Pamela	5/21/97	12:37:10 PM	Mozilla/3.01Gold (Win16;
206.35.3.206	DeBellis	Ronald	4/09/97	10:29:26 AM	Mozilla/2.02 (Win16; I)
			5/09/97	13:54:03 PM	Mozilla/2.02 (Win16; I)
				13:56:28 PM	Mozilla/2.02 (Win16; I)
206.65.136.1	Liken	Lina	5/21/97	20:08:02 PM	Mozilla/3.0 (Win95; U)
206.65.136.1	Oberjosh	Cindy	5/18/97	22:06:58 PM	Mozilla/3.0 (Win95; U)
206.65.250.1	Winston		3/17/97	19:39:32 PM	Mozilla/3.01 (Win95; I)
		Marci		19:38:24 PM	Mozilla/3.01 (Win95; I)
206.65.250.1	Gloe	Donna	5/16/97	18:40:46 PM	Mozilla/2.0 (compatible; M
206.74.204.2	Wheat	Barbara	4/21/97	08:58:43 AM	Mozilla/3.0 (Win95; U; 16
206.8.50.29	Donelson	David	6/02/97	12:21:44 PM	Mozilla/1.22 (Windows; I;
	Wozniak	Gary	5/15/97	15:31:11 PM	Mozilla/2.01 (Win16; U) v
207.1.200.15	Martin	Jill	5/12/97	19:11:03 PM	Mozilla/1.12APPLE (Maci
207.115.1.16	Michel	Kevin	3/17/97	17:39:32 PM	Mozilla/3.0
207.116.33.3	Wenzel	Maura	3/31/97	19:59:41 PM	Mozilla/2.0 (compatible; M
				20:01:04 PM	Mozilla/2.0 (compatible; M
				20:01:11 PM	Mozilla/2.0 (compatible; M
207.116.44.2	Wold	Kathleen		20:54:57 PM	Mozilla/3.0Gold (Win95; I)
				20:54:58 PM	Mozilla/3.0Gold (Win95; I)
				20:59:31 PM	Mozilla/3.0Gold (Win95; I)
207.141.119.	Chandler	Michael	5/12/97	10:16:44 AM	Mozilla/3.0 (Win95; U)
207.146.220.	Burns	Shannon	3/27/97	09:46:12 AM	Mozilla/1.22ATT (Window
207.146.68.1	Campbell	Gwendolyn	5/20/97	23:01:50 PM	Mozilla/3.01Gold (Win95;
207.146.82.2	Wattenbarger	James	4/24/97	18:03:31 PM	Mozilla/3.01Gold (Win95;
207.147.0.19	Strasser	Nora	3/26/97	22:13:36 PM	Mozilla/2.0 (compatible; M
207.158.3.57	Palmisano		3/19/97	22:35:54 PM	Mozilla/3.0 (Win95; I)
		Gail		22:34:50 PM	Mozilla/3.0 (Win95; I)
207.160.243.	Wellborn	Linda	5/16/97	11:17:04 AM	Mozilla/2.0 (Win16; I)
207.211.71.1	Lorion	James	4/29/97	13:41:08 PM	Mozilla/3.0 (Win95; I)
207.226.101.	Hoehlein	Richard	5/17/97	22:47:31 PM	Mozilla/3.0Gold (Win95; U
207.226.108.	Barger	James	4/20/97	20:13:00 PM	Mozilla/4.0 (compatible; M
207.41.16.12	Freedman	Jane	5/26/97	22:01:25 PM	Mozilla/2.0 (Macintosh; I;

ip address	lname	fname	datesubmitt	timesubmitted	brownser used
207.53.0.160	VanBeneden	Judith	5/03/97	18:34:27 PM	Mozilla/2.02E-BSNET (W
				18:48:06 PM	Mozilla/2.02E-BSNET (W
207.53.124.2	McCarthy	Larry	4/08/97	20:25:53 PM	Mozilla/2.02E-BSNET (W
207.59.67.5	Smathers	Harold	5/11/97	23:01:48 PM	Mozilla/2.02E-KIT (Win95
207.67.48.86	Campbell	Jeanette	5/12/97	22:34:47 PM	Mozilla/2.0 (compatible; M
				22:39:17 PM	Mozilla/2.0 (compatible; M
				22:44:28 PM	Mozilla/2.0 (compatible; M
	TRUTTMANN	JUDY	3/22/97	18:09:23 PM	Mozilla/3.01 (Win95; I)
207.69.140.3	Cleveland	Kathleen	3/31/97	16:19:02 PM	Mozilla/3.01 (Win95; I)
207.69.148.2	Gasparrini	Daniel	4/22/97	14:17:32 PM	Mozilla/3.0 (Win95; I)
207.69.148.2			4/21/97	20:14:19 PM	Mozilla/3.0 (Win95; I)
		Daniel		20:13:26 PM	Mozilla/3.0 (Win95; I)
207.69.173.1	Johnson	Marilyn	5/21/97	01:33:56 AM	Mozilla/2.0 (compatible; M
208.129.184.	Hussey	James	4/06/97	22:19:26 PM	Mozilla/2.02E (Win95; U)
208.137.72.1	Ivey	Rita	5/30/97	20:14:48 PM	Mozilla/2.0 (compatible; M
208.142.81.4	Thornton	Susan	3/18/97	20:53:50 PM	Mozilla/1.22 (Windows; U;
				20:54:29 PM	Mozilla/1.22 (Windows; U;
208.2.167.31	Keen		3/30/97	16:05:04 PM	Mozilla/2.0 (compatible; M
210.129.0.13	Kelly	Curtis	4/19/97	21:25:27 PM	Mozilla/3.0Gold (Macintos
38.241.111.3	Mills	Brett	5/21/97	13:07:00 PM	Mozilla/3.01Gold (Win16;



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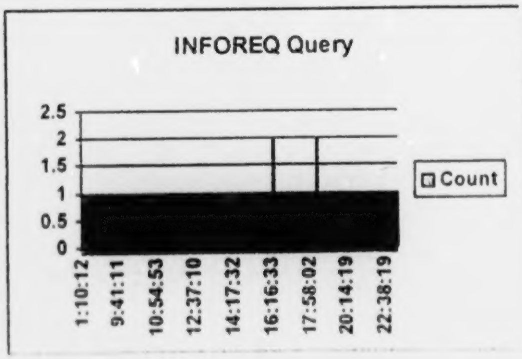
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22:38:19
Count

Email Query

LastName	FirstName	Email Name	Faculty or student	Sex	date	time
Barger	James	N	S	m	4/30/97	20:57:00
		N	S	m	4/30/97	20:57:00
Brantey	Tom	N	S	m	5/ 1/97	19:01:00
Calabrese	Paula	y	F	F	5/20/97	13:28:00
Carlson	Dan	N	f	m	5/10/97	07:33:00
		N	f	m	5/13/97	01:27:00
		N	F	m	5/19/97	16:48:00
		N	F	m	5/20/97	13:35:00
		N	F	m	5/21/97	16:42:00
		N	F	m	5/22/97	14:18:00
		N	F	m	5/23/97	08:29:00
		y	F	m	5/10/97	16:48:00
		N	f	m	6/ 2/97	23:35:00
		N	f	m	6/ 3/97	06:41:00
Chojnicki	Linda	N	S	F	5/ 2/97	08:28:00
Christie	Ada	y	f	F	5/12/97	11:27:00
		y	f	F	6/ 4/97	09:05:00
Crowley	Mike	N	S	m	5/ 2/97	06:31:00
Davis	Judy	N	F	F	5/27/97	13:51:00
	Tom	N	F	m	5/19/97	15:12:00
		N	S	m	5/ 1/97	15:06:00
Derby	Tania	y	f	F	6/ 4/97	13:39:00
	Tanya	y	f	F	6/ 4/97	09:30:00
Devine	Sara	y	F	F	5/30/97	10:22:00
Domino	John	N	F	m	5/29/97	14:50:00
Goodnetter	Martha	y	S	F	5/ 4/97	22:07:00
Goonen	Norma	y	f	F	5/ 8/97	14:44:00
		y	f	F	5/ 8/97	14:44:00
		y	f	F	5/ 8/97	14:44:00
		y	F	F	5/19/97	09:52:00
		y	F	F	5/30/97	10:03:00
Graham	Ed	N	S	m	5/13/97	07:27:00
Guerra	Arturo	N	F	m	5/28/97	10:34:00
Hannah	Stan	y	F	F	5/30/97	09:21:00
		y	F	m	5/19/97	13:31:00
		y	F	m	5/20/97	13:31:00
		y	F	m	5/20/97	13:51:00
		y	F	m	5/20/97	14:37:00

LastName	FirstName	Email Name	Faculty or student	Sex	date	time
Hannah	Stan	y	F	m	5/20/97	14:41:00
		y	F	m	5/23/97	09:44:00
		y	F	m	5/30/97	10:03:00
		y	F	m	5/30/97	13:55:00
		y	f	m	6/ 3/97	09:04:00
		y	f	m	6/ 4/97	16:09:00
Hellman	Madeleine	y	S	F	6/ 2/97	20:35:00
	Madeline	N	S	F	5/12/97	13:43:00
Hoehlein	Rich	N	f	m	5/13/97	20:57:00
		N	f	m	5/13/97	20:57:00
		N	f	m	5/17/97	22:53:00
		N	F	m	5/20/97	08:21:00
		N	F	m	5/26/97	14:42:00
		N	F	m	5/26/97	14:57:00
		y	F	m	5/26/97	14:42:00
		y	f	m	6/ 3/97	18:55:00
		y	f	m	6/ 3/97	21:18:00
Holden	Olga	y	F	F	5/20/97	14:19:00
		y	F	F	5/21/97	14:10:00
		y	F	F	5/21/97	14:10:00
		y	F	F	5/21/97	23:43:00
ic	Zoo	N	F	F	5/27/97	16:58:00
Johnson	Marilyn	y	F	F	6/ 3/97	09:06:00
Kaminsky	Greg	N	F	m	5/30/97	20:19:00
Kroll	Ron	y	F	m	5/12/97	11:18:00
		y	f	m	5/12/97	15:25:00
		y	f	m	5/15/97	10:59:00
		y	F	m	5/15/97	10:59:00
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		y	F	m	5/19/97	10:53:00
		y	F	m	5/20/97	07:16:00
		y	f	m	6/ 4/97	13:30:00
Lanser	Michael	N	F	m	5/20/97	13:42:00
		N	F	m	5/21/97	20:26:00
		N	F	m	5/30/97	09:45:00
		N	S	m	5/ 1/97	10:55:00
	Mike	N	S	m	5/ 1/97	10:55:00
Little	Lynn	N	f	m	4/21/97	07:41:00
Lopez	Linda	y	f	F	5/ 7/97	16:28:00
Ludden	LaVerne	N	S	F	5/15/97	19:58:00
McLeod	Stephen	y	F	m	5/21/97	13:28:00
		y	F	m	5/21/97	15:16:00

LastName	FirstName	Email Name	Faculty or student	Sex	date	time
McLeod	Stephen	y	F	m	5/24/97	13:28:00
Mizell	Al	y	f	m	5/ 7/97	22:03:00
Moreton	Ross	y	f	m	5/13/97	11:17:00
Muzio	Jeanette	N	S	F	5/ 1/97	15:28:00
Parks	Martin	y	F	m	6/ 3/97	11:27:00
		y	f	m	6/ 3/97	11:27:00
		y	f	m	6/ 3/97	11:27:00
		y	f	m	6/ 4/97	17:13:00
		y	f	m	6/ 5/97	08:53:00
Peck	Johanne	y	f	F	4/29/97	10:27:00
		y	f	F	4/29/97	10:27:00
Ramos	Maryann	y	S	F	6/ 2/97	08:03:00
Remington	David	N	F	m	5/30/97	11:44:00
Reynolds	Steve	N	S	m	4/30/97	17:50:00
		N	S	m	4/30/97	17:50:00
Seaton	Sharon	N	S	F	5/ 1/97	13:56:00
Shearin	Ed	N	S	m	5/ 1/97	11:57:00
Shelton	Maria	y	f	F	5/ 2/97	16:03:00
Shire	Stan	N	S	m	5/ 1/97	09:08:00
		N	S	m	5/ 1/97	09:08:00
Smiley	Delores	y	f	F	5/ 8/97	14:07:00
		y	f	F	5/ 8/97	14:07:00
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		y	f	F	5/ 8/97	14:07:00
		y	f	F	5/ 8/97	14:07:00
Starr	Neil	y	F	m	5/27/97	12:17:00
Stiber	Greg	y	F	m	5/27/97	11:10:00
Varcoe	Ken	N	F	m	5/29/97	16:44:00
		y	F	m	5/24/97	14:46:00
Walker	Tanya	y	f	F	5/ 8/97	12:52:00
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		y	f	F	5/14/97	09:43:00
		y	F	F	5/20/97	15:06:00
		y	F	F	5/20/97	16:30:00
Watkins	Diana	y	f	F	5/13/97	06:50:00

LastName	FirstName	Email Name	Faculty or student	Sex	date	time
Watkins	Diana	y	f	F	5/13/97	06:56:00
		y	f	F	5/18/97	19:25:00
		y	F	F	5/19/97	08:34:00
		y	F	F	5/19/97	08:59:00
		y	F	F	5/19/97	10:30:00
		y	F	F	5/19/97	12:30:00
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		y	F	F	5/20/97	07:25:00
		y	F	F	5/20/97	09:56:00
		y	F	F	5/20/97	13:39:00
		y	F	F	5/21/97	12:19:00
		y	F	F	5/21/97	15:13:00
		y	F	F	5/22/97	07:27:00
		y	F	F	5/27/97	08:23:00
		y	F	F	5/29/97	06:49:00
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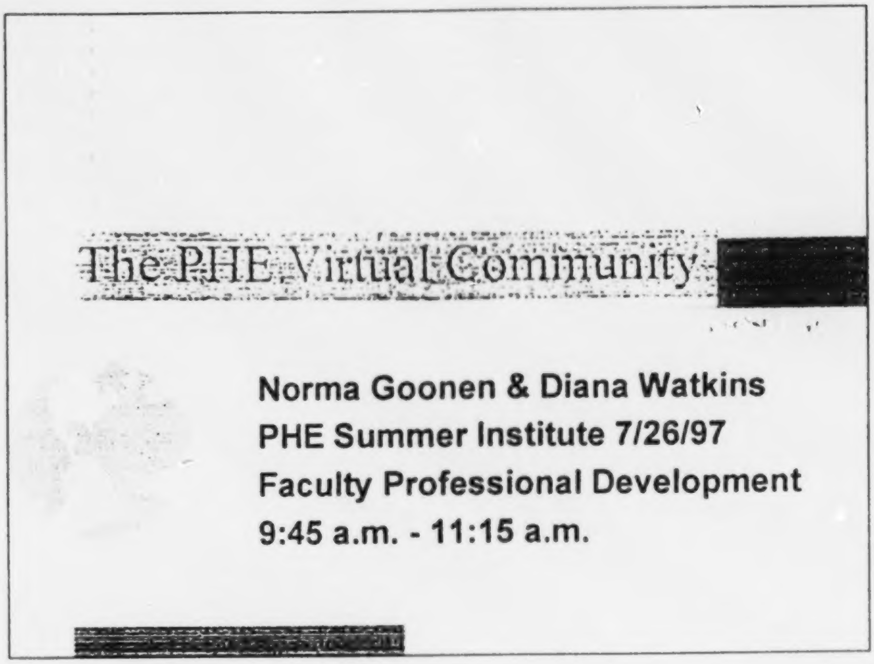
		y	S	F	5/ 8/97	06:57:00
		y	S	F	5/ 8/97	06:57:00
		y	s	F	5/13/97	06:59:00
		y	F	F	6/ 3/97	08:28:00
		y	S	F	6/ 4/97	07:31:00
		y	S	F	6/ 4/97	10:32:00
		y	S	F	6/ 4/97	10:32:00
		y	S	F	6/ 5/97	08:41:00
	Ed	N	F	m	5/20/97	07:09:00
		N	F	m	5/20/97	16:31:00

Appendix J

Curriculum for Evaluation Training Sessions and Data

The PHE Virtual Community

Faculty Development Session
1997 Summer Institute



The PHE Virtual Community

Norma Goonen & Diana Watkins
PHE Summer Institute 7/26/97
Faculty Professional Development
9:45 a.m. - 11:15 a.m.

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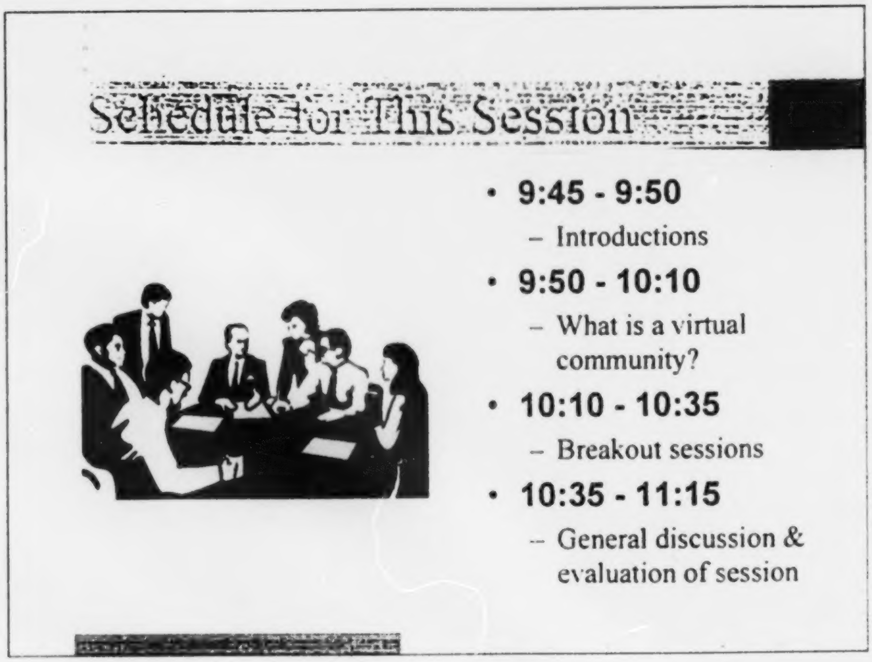

Schedule for This Session

- **9:45 - 9:50**
  - Introductions
- **9:50 - 10:10**
  - What is a virtual community?
- **10:10 - 10:35**
  - Breakout sessions
- **10:35 - 11:15**
  - General discussion & evaluation of session

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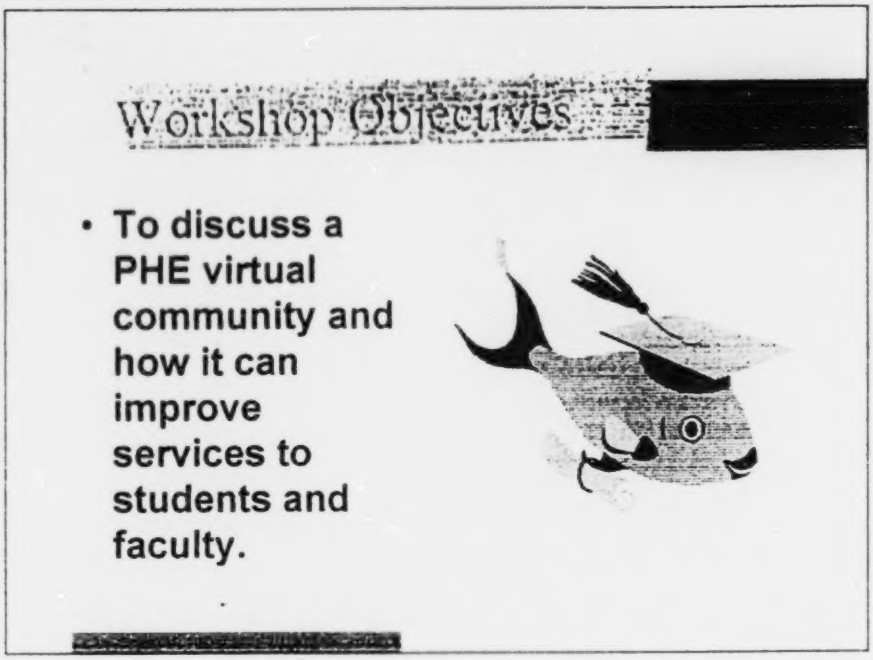

Workshop Objectives

- To discuss a PHE virtual community and how it can improve services to students and faculty.

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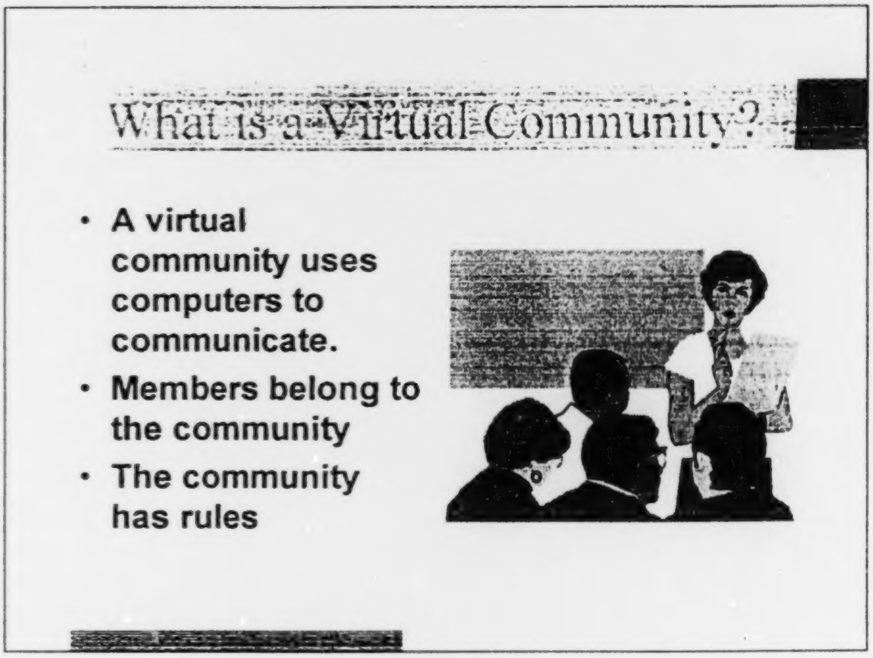

What is a Virtual Community?

- A virtual community uses computers to communicate.
- Members belong to the community
- The community has rules

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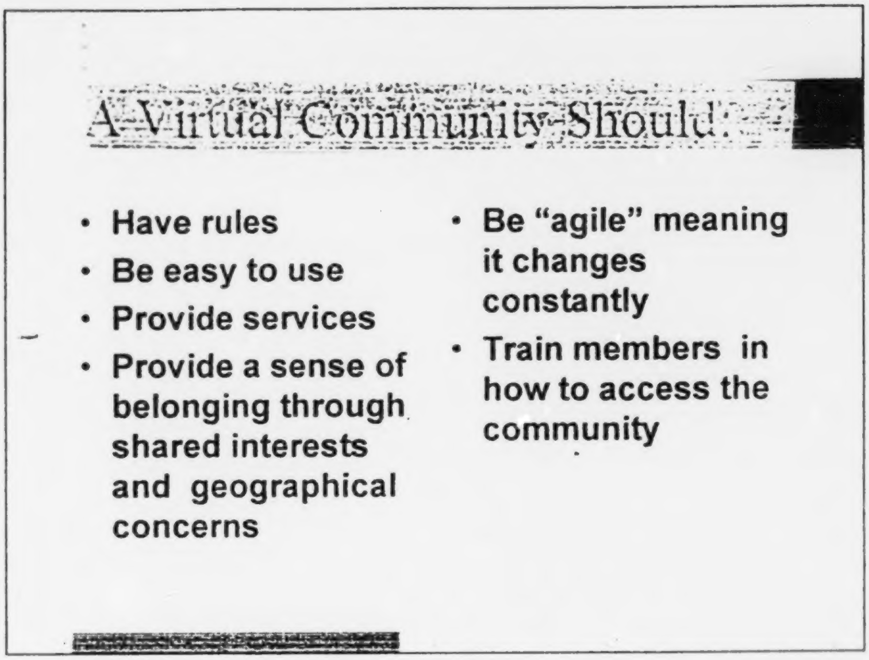

A Virtual Community Should:

- Have rules
- Be easy to use
- Provide services
- Provide a sense of belonging through shared interests and geographical concerns
- Be "agile" meaning it changes constantly
- Train members in how to access the community

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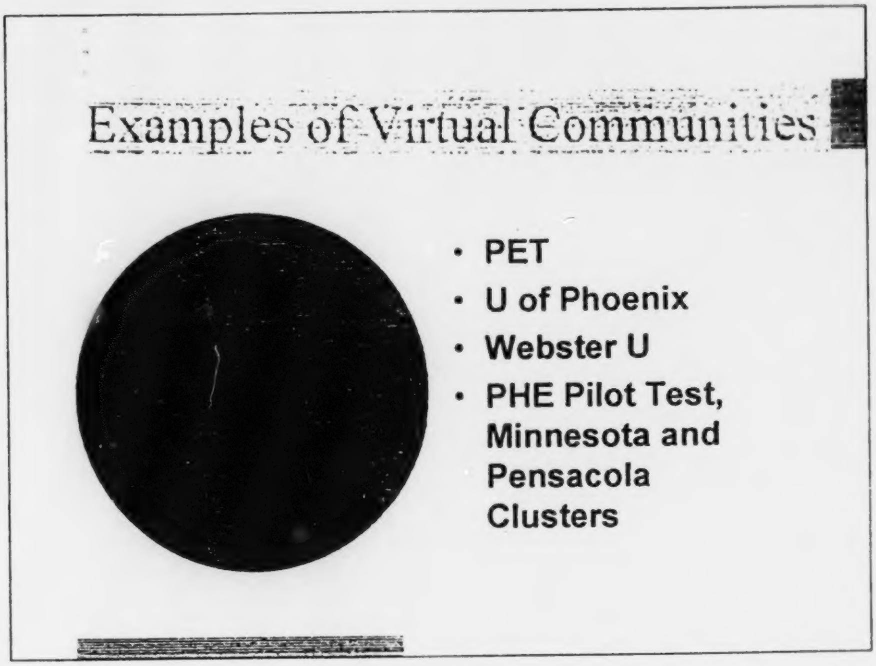

Examples of Virtual Communities

- PET
- U of Phoenix
- Webster U
- PHE Pilot Test, Minnesota and Pensacola Clusters

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The PHE Virtual Community

6/17/97

Click here to start

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The PHE Virtual Community

Schedule for This Session

Workshop Objectives

What is a Virtual Community?

A Virtual Community Should:

Examples of Virtual Communities

Possible Components

Your Input

Fill out the sheet labeled faculty professional development while sitting in your groups.

General Discussion

Summary of Actions Today

Evaluation

Author: Diana Watkins

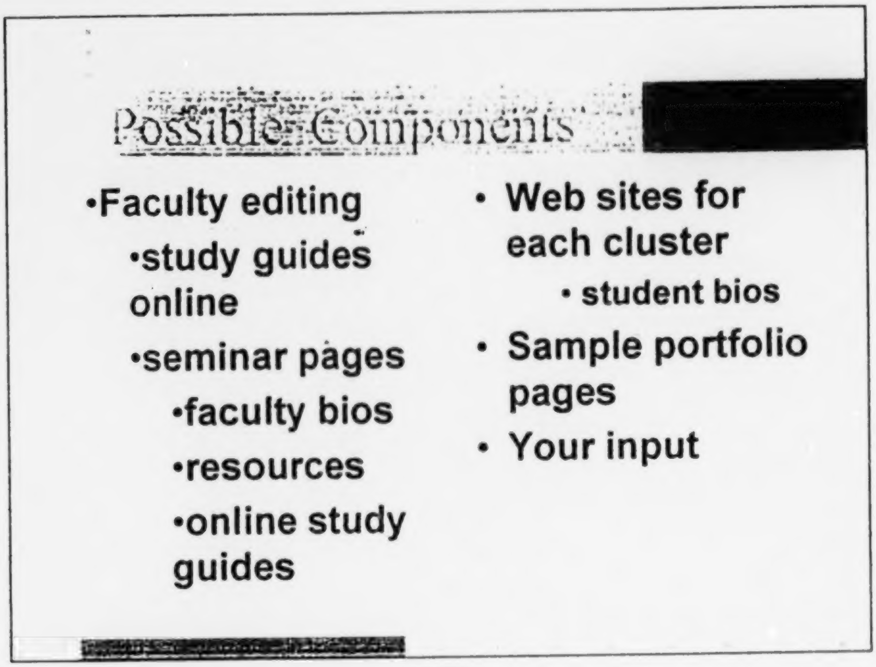
Email: watkinsd@fcae.acast.nova.edu

Home Page: http://137.52.70.200/student_registration/

Best experienced with Microsoft Internet Explorer

Click here to start.

Download presentation source



Possible Components

- •Faculty editing
  - •study guides online
  - •seminar pages
    - •faculty bios
    - •resources
    - •online study guides

- Web sites for each cluster
  - student bios
- Sample portfolio pages
- Your input

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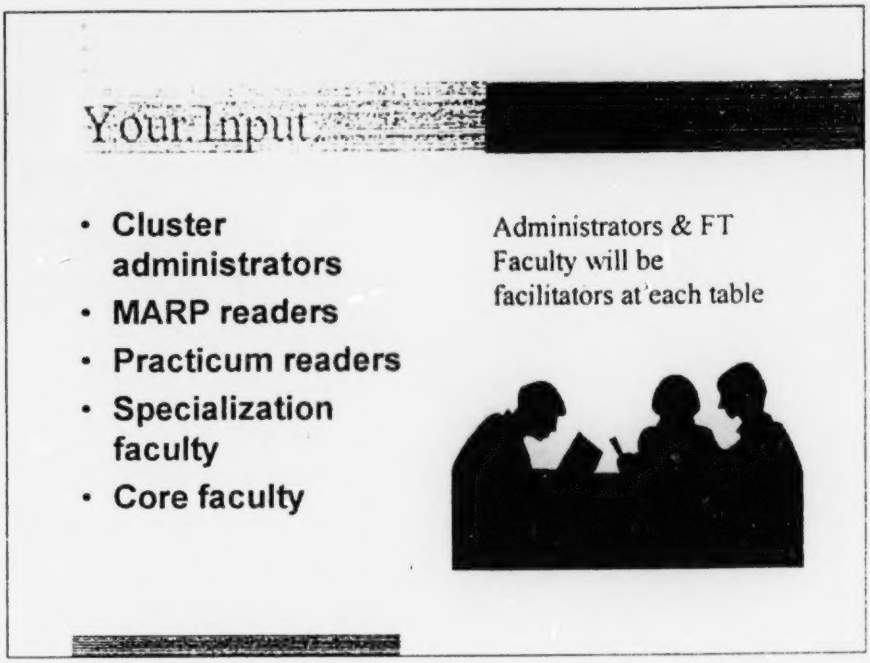

Your Input

- Cluster administrators
- MARP readers
- Practicum readers
- Specialization faculty
- Core faculty

Administrators & FT Faculty will be facilitators at each table

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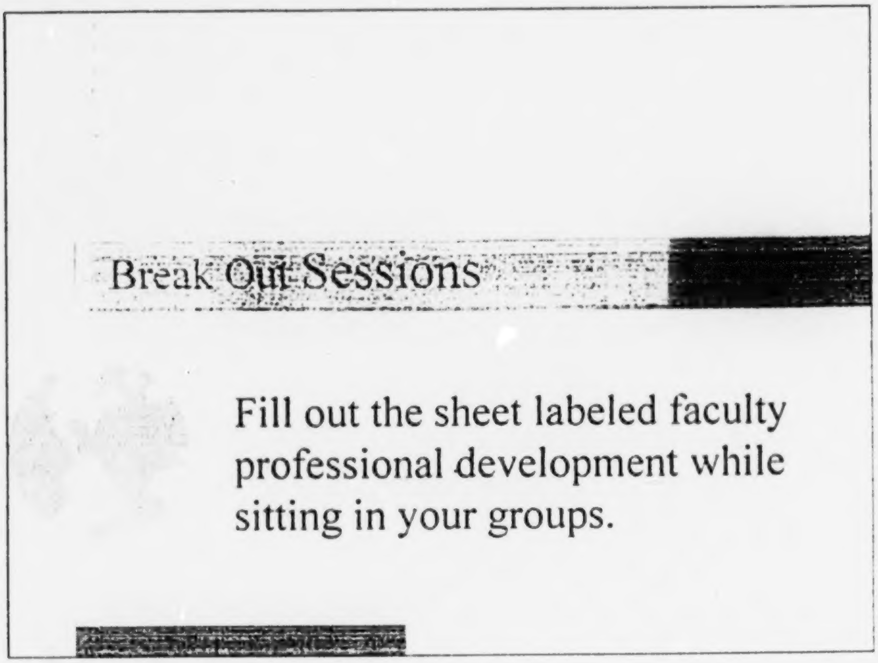

Break Out Sessions

Fill out the sheet labeled faculty professional development while sitting in your groups.

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Faculty Professional Development

7/26/97

The PHE Virtual Community

Criteria that should be included for the proposed PHE Virtual Community.

1. Cluster Administrators

PLEASE HAND THIS IN WITH YOUR EVALUATION FORM.

THANK YOU.

Faculty Professional Development

7/26/97

The PHE Virtual Community

Criteria that should be included for the proposed PHE Virtual Community.

1. MARP readers

PLEASE HAND THIS IN WITH YOUR EVALUATION FORM.

THANK YOU.

Faculty Professional Development

7/26/97

The PHE Virtual Community

Criteria that should be included for the proposed PHE Virtual Community.

1. Practicum readers

PLEASE HAND THIS IN WITH YOUR EVALUATION FORM.

THANK YOU.

Faculty Professional Development

7/26/97

The PHE Virtual Community

Criteria that should be included for the proposed PHE Virtual Community.

1. Specialization Faculty

PLEASE HAND THIS IN WITH YOUR EVALUATION FORM.

THANK YOU.

Faculty Professional Development

7/26/97

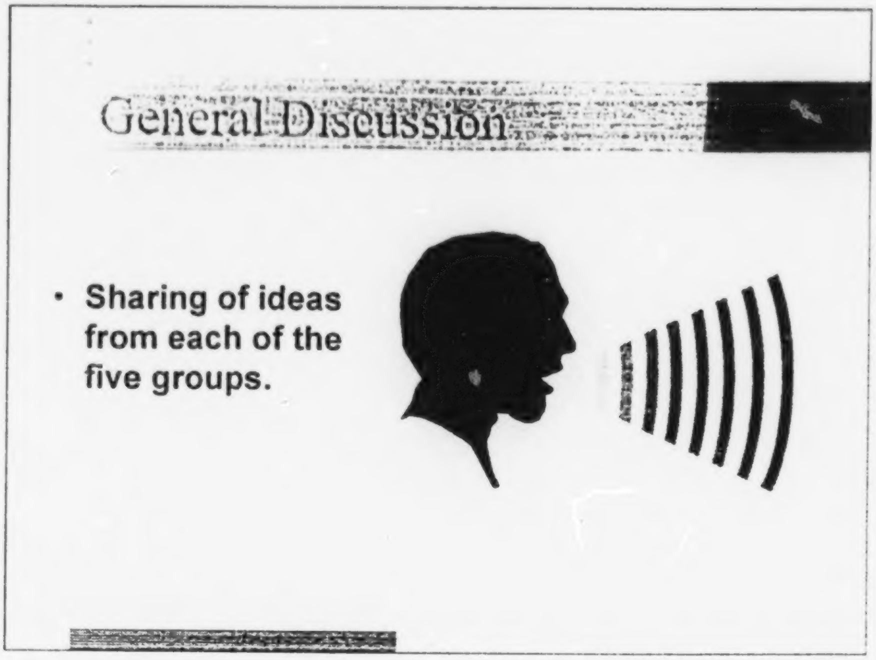
The PHE Virtual Community

Criteria that should be included for the proposed PHE Virtual Community.

1. Core Faculty

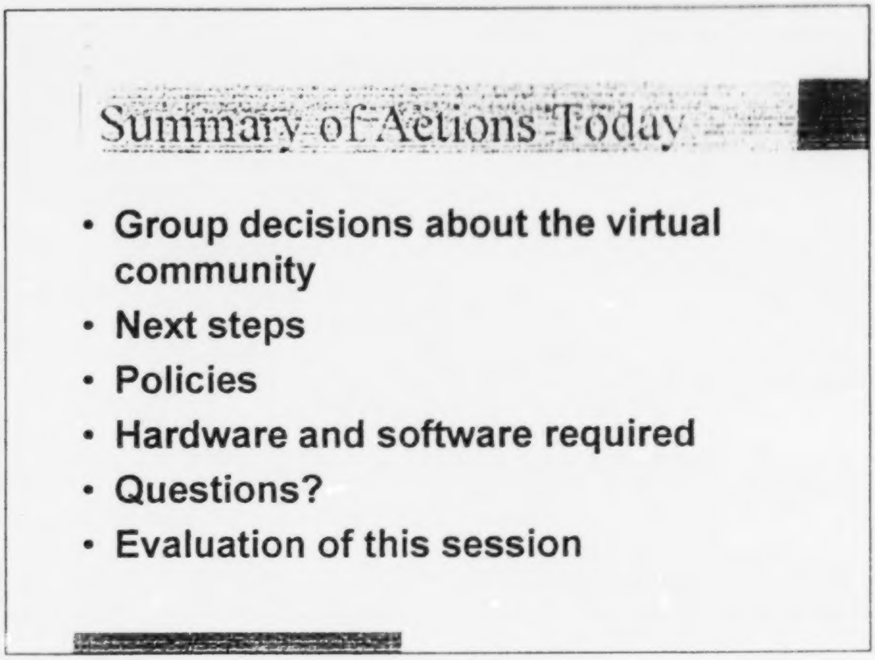
PLEASE HAND THIS IN WITH YOUR EVALUATION FORM.

THANK YOU.



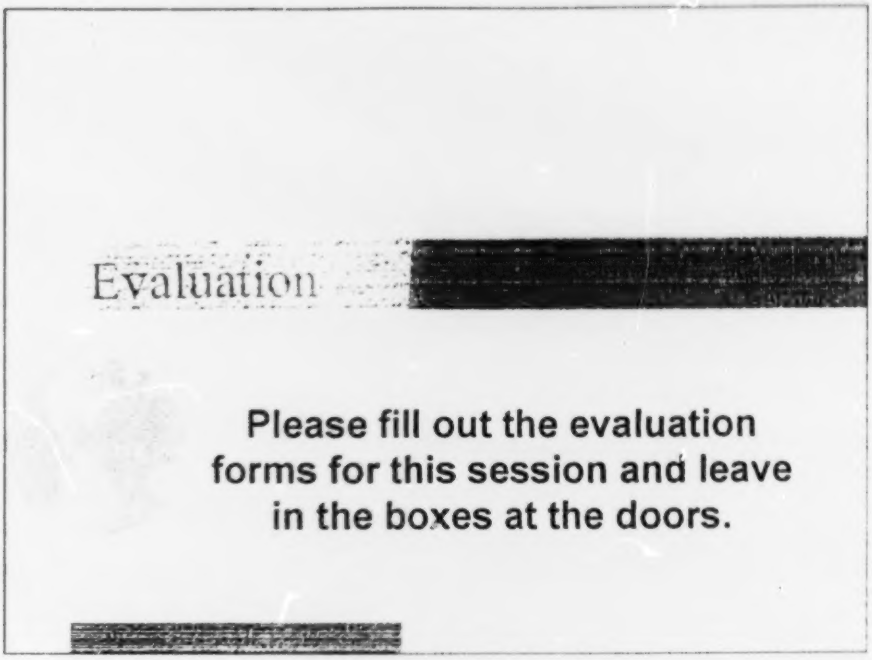
General Discussion

- Sharing of ideas from each of the five groups.



Summary of Actions Today

- Group decisions about the virtual community
- Next steps
- Policies
- Hardware and software required
- Questions?
- Evaluation of this session



Evaluation

Please fill out the evaluation forms for this session and leave in the boxes at the doors.

Faculty Professional Development

7/26/97

PHE Virtual Community Workshop Evaluation

Your position:

☐ Specialization Faculty
☐ Core Faculty
☐ Cluster Administrator
☐ MARP Advisor
☐ Practicum Advisor

Please circle the number that best reflects your level of agreement or disagreement with the statements below.

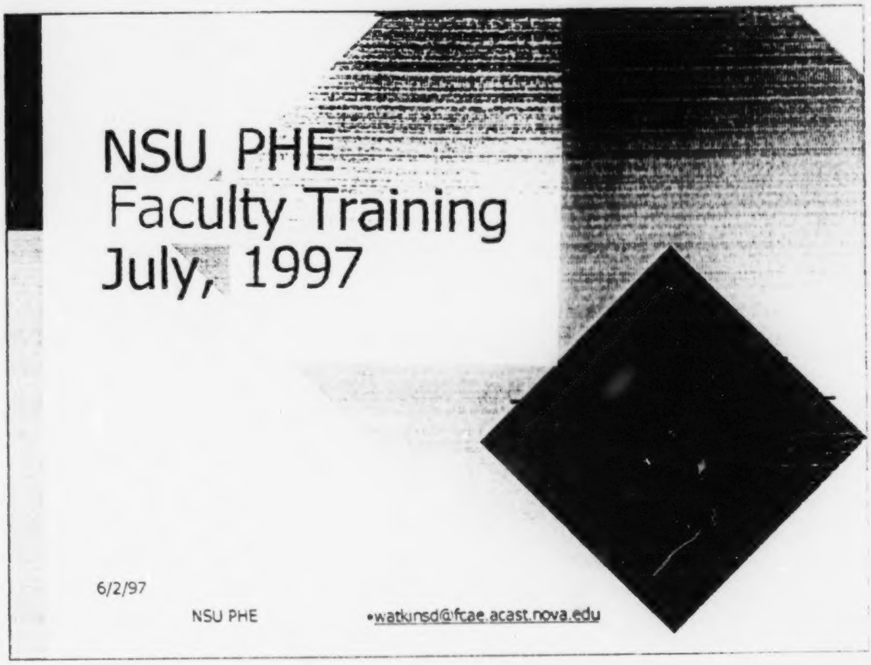
	Strongly Agree				Strongly Disagree
1. The objectives of this workshop were clearly stated.	5	4	3	2	1
2. The materials were very useful.	5	4	3	2	1
3. The course content will help me perform my job.	5	4	3	2	1
4. The activities were relevant and useful.	5	4	3	2	1
5. The trainers were knowledgeable in the subject.	5	4	3	2	1
6. The trainers presentation was effective.	5	4	3	2	1
7. The trainers encouraged class participation.	5	4	3	2	1
8. The training facilities were conducive to learning.	5	4	3	2	1

9. What was the most effective part of this workshop?____________________

10. What was the least effective part?____________________

11. How can this be improved? ____________________

12. Comments:____________________



NSU PHE
Faculty Training
July, 1997

6/2/97

NSU PHE

•watkinsd@fcae.acast.nova.edu

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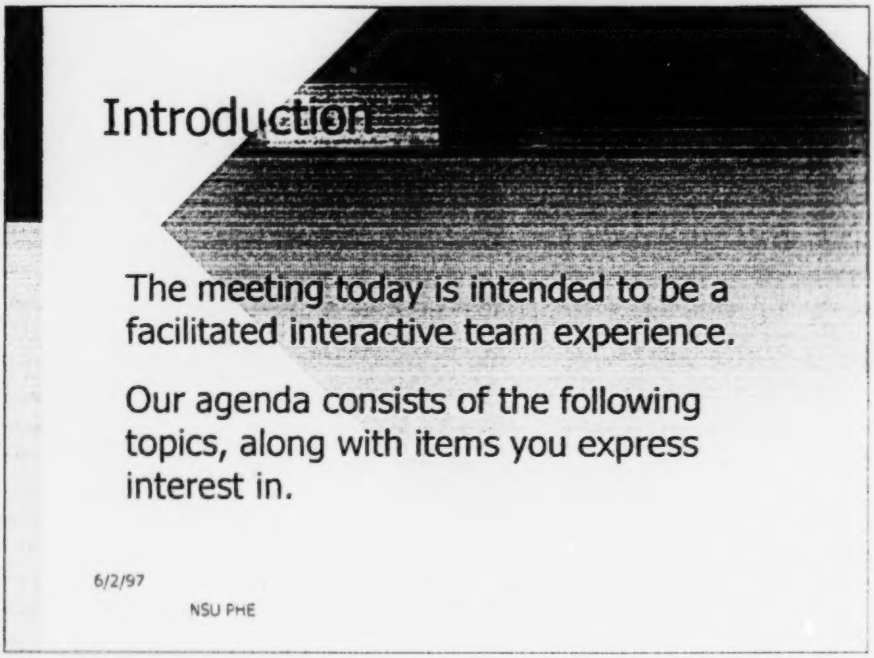

Introduction

The meeting today is intended to be a facilitated interactive team experience.

Our agenda consists of the following topics, along with items you express interest in.

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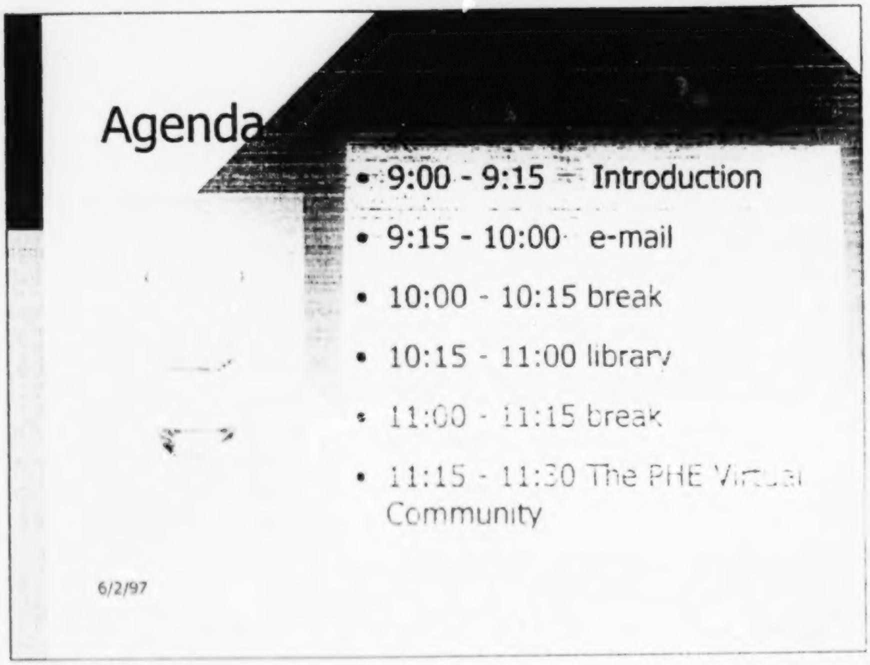

Agenda

- 9:00 - 9:15 – Introduction
- 9:15 - 10:00 e-mail
- 10:00 - 10:15 break
- 10:15 - 11:00 library
- 11:00 - 11:15 break
- 11:15 - 11:30 The PHE Virtual Community

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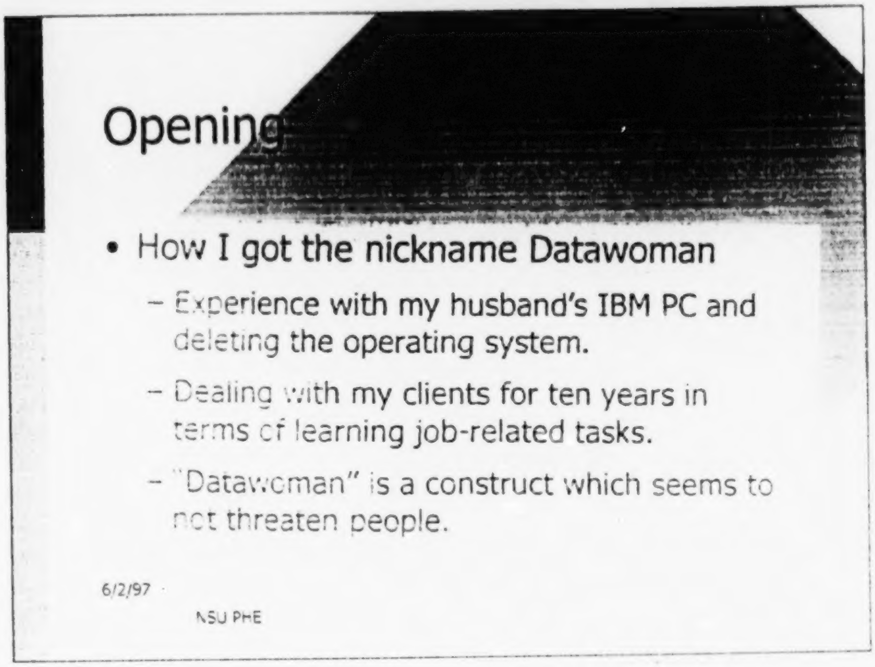

Opening

- How I got the nickname Datawoman
  - Experience with my husband's IBM PC and deleting the operating system.
  - Dealing with my clients for ten years in terms of learning job-related tasks.
  - "Datawoman" is a construct which seems to not threaten people.

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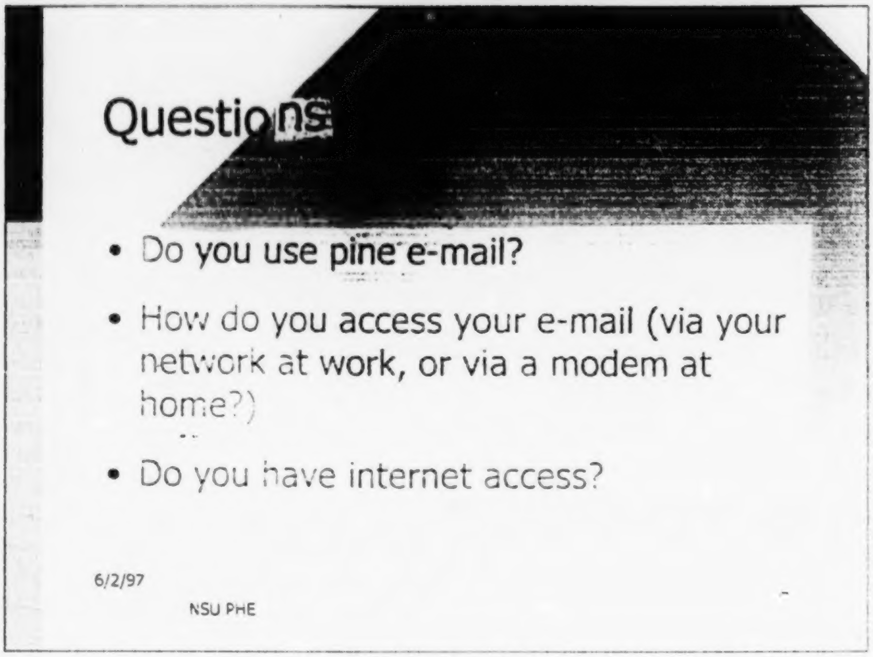

Questions

- Do you use pine e-mail?
- How do you access your e-mail (via your network at work, or via a modem at home?)
- Do you have internet access?

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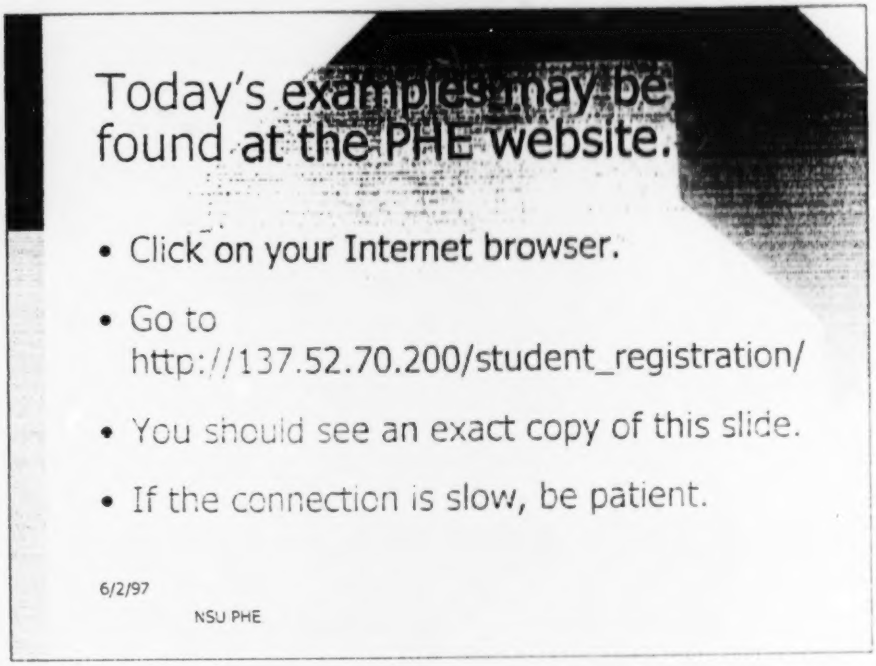

Today's examples may be found at the PHE website.

- Click on your Internet browser.
- Go to http://137.52.70.200/student_registration/
- You should see an exact copy of this slide.
- If the connection is slow, be patient.

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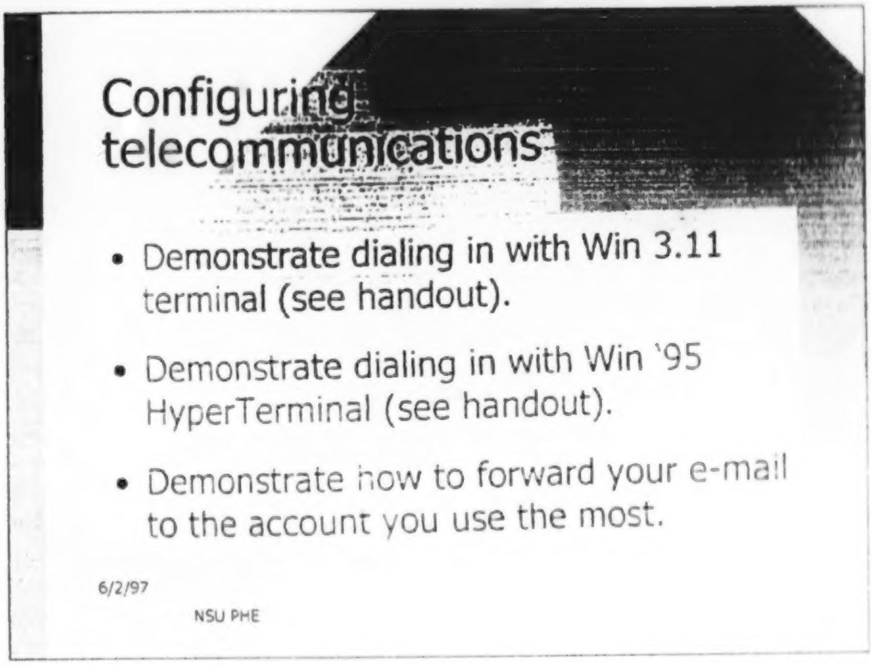

Configuring telecommunications

- Demonstrate dialing in with Win 3.11 terminal (see handout).
- Demonstrate dialing in with Win '95 HyperTerminal (see handout).
- Demonstrate how to forward your e-mail to the account you use the most.

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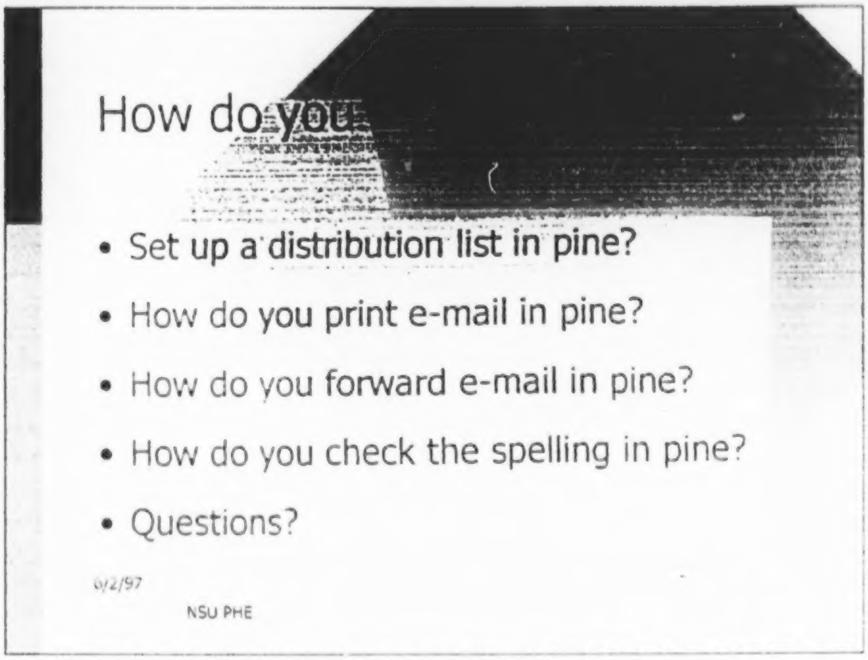

How do you

- Set up a distribution list in pine?
- How do you print e-mail in pine?
- How do you forward e-mail in pine?
- How do you check the spelling in pine?
- Questions?

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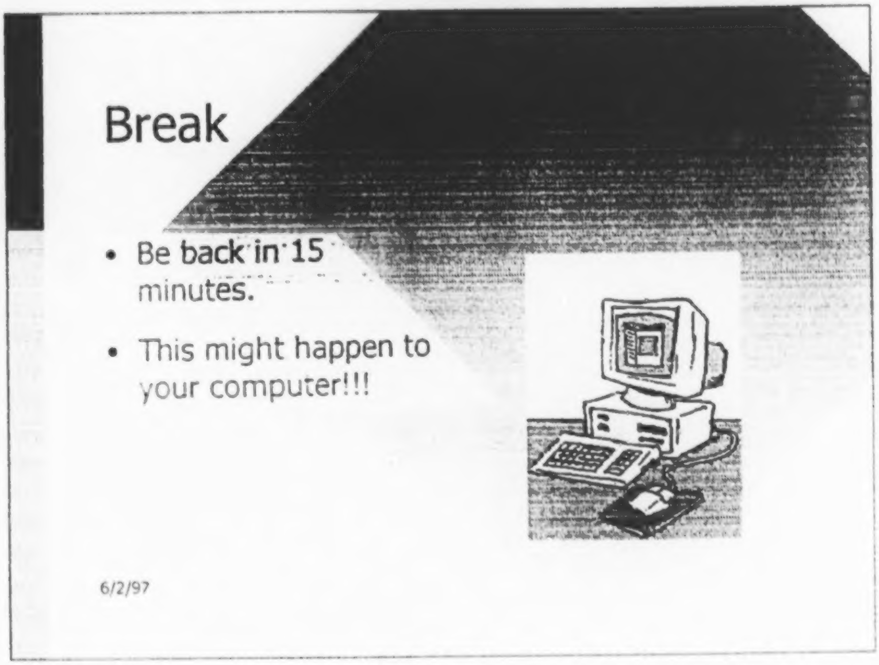

Break

- Be back in 15 minutes.
- This might happen to your computer!!!

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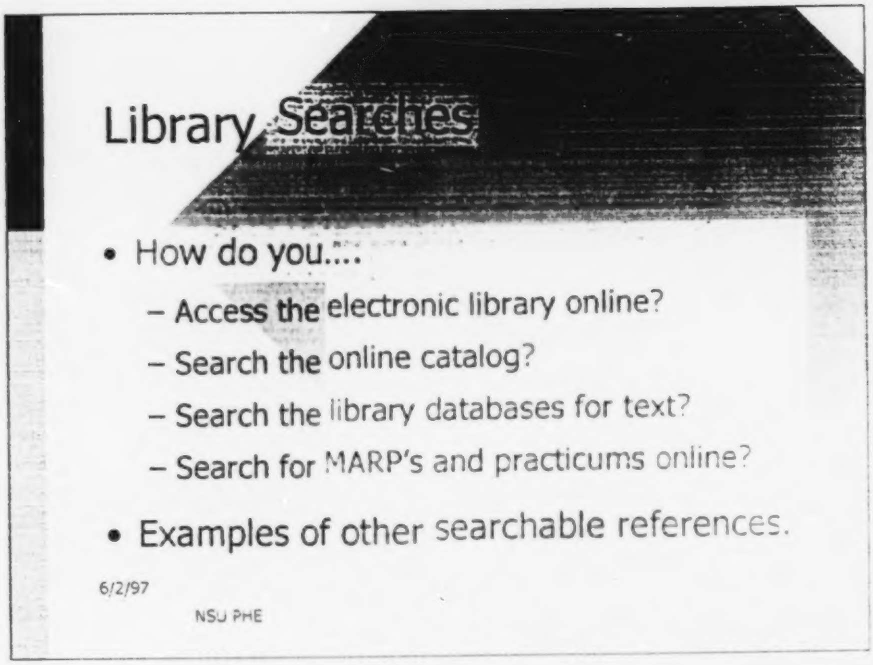

Library Searches

- How do you....
  - Access the electronic library online?
  - Search the online catalog?
  - Search the library databases for text?
  - Search for MARP's and practicums online?
- Examples of other searchable references.

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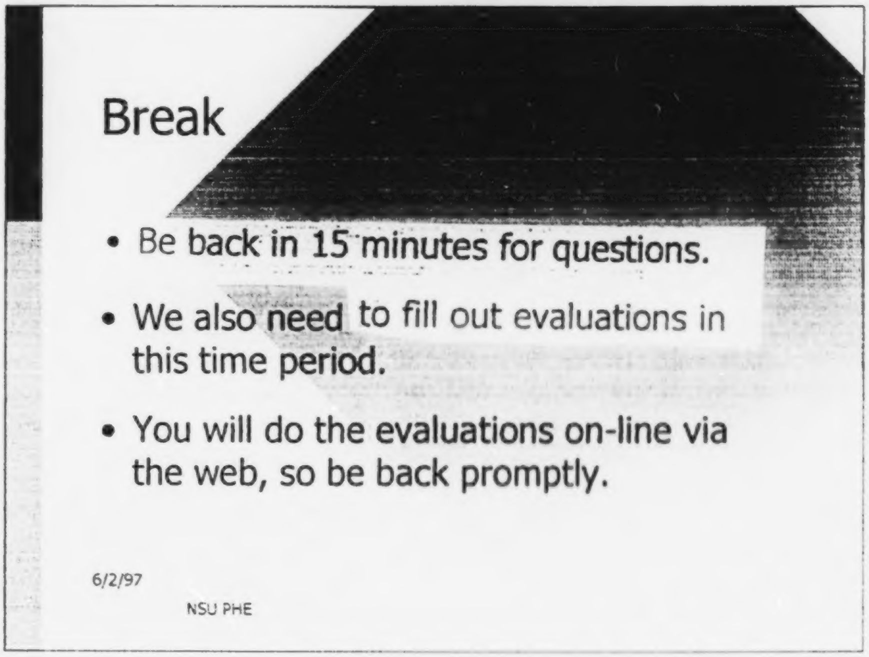

Break

- Be back in 15 minutes for questions.
- We also need to fill out evaluations in this time period.
- You will do the evaluations on-line via the web, so be back promptly.

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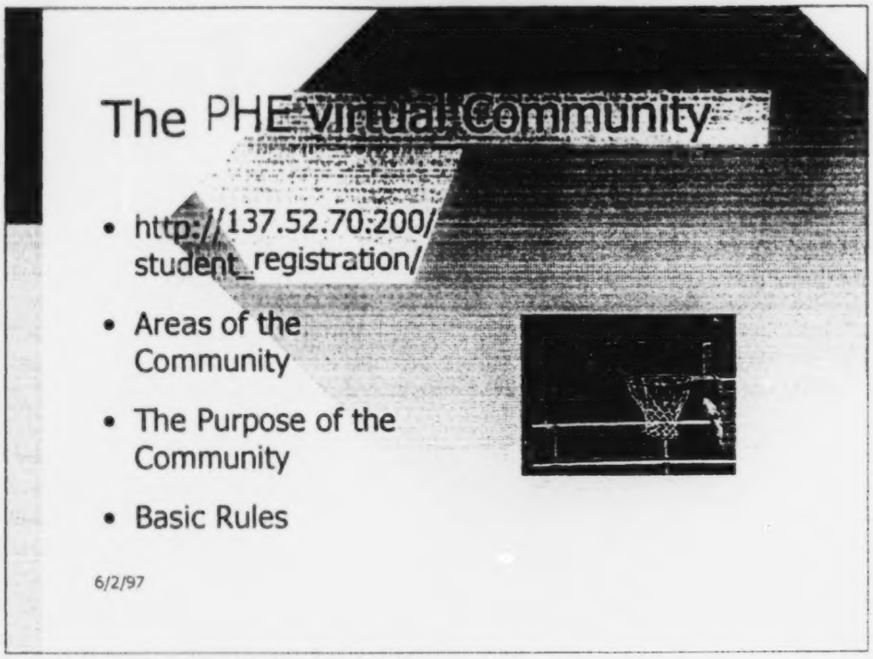

The PHE Virtual Community

- http://137.52.70.200/student_registration/
- Areas of the Community
- The Purpose of the Community
- Basic Rules

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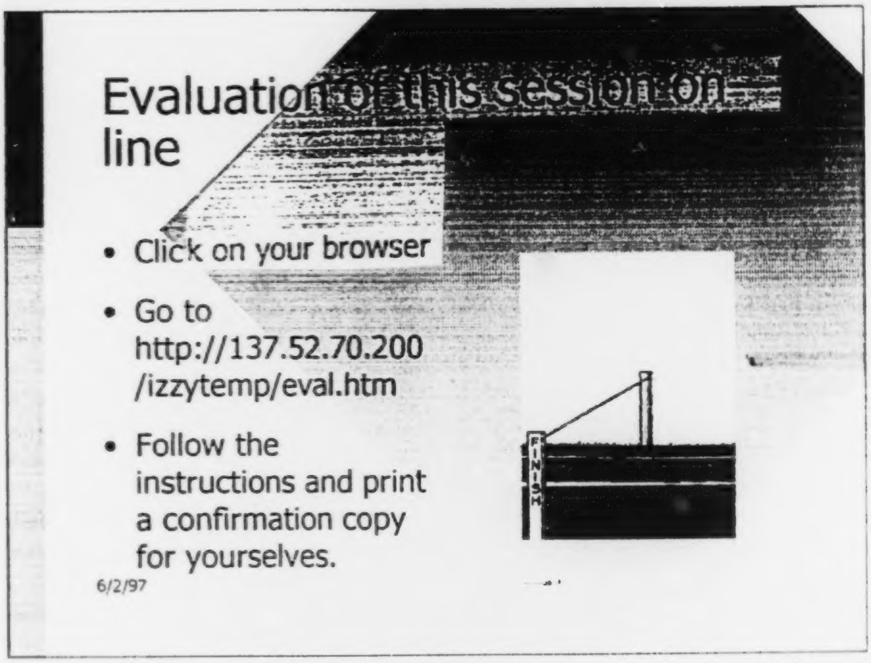

Evaluation of this session on-line

- Click on your browser
- Go to http://137.52.70.200 /izzytemp/eval.htm
- Follow the instructions and print a confirmation copy for yourselves.

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Appendix K

Data for Evaluation Training Sessions

PHE Central Staff	6/16/97						
Question 1	5	4	5	5	4	5	4.666666667
Question 2	5	4	4	4	3	5	4.166666667
Question 3	4	5	3	5	5	5	4.5
Question 4	5	4	5	4	5	5	4.666666667
Question 5	5	5	5	5	5	5	5
Question 6	5	5	4	4	4	5	4.5
Question 7	5	5	4	5	5	5	4.833333333
Question 8	5	5	4	4	4	4	4.333333333

Number	Type	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	
1		3		4	3	4	2	3	3	
2		5	5	4	3	5	3	5	3	
3		5	5	5	5	5	5	5	5	
4		5	5	5	5	5	5	5	5	
5		5	5	5	5	5	5	5	5	
6		5	5	5	5	5	5	5	5	
7		4	4	4	4	5	3		4	
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12		4	4	4	4	4	4	4	4	
13		5	5	5	5	5	5	5	5	
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4	7	5	5	5	5	5	5	5	5	
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6	7	5	5	5	5	5	5	5	5	
7	7	3		4	3	4	2	3	3	
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Number	Type	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
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15	3	5	5	5	5	5	5	5	5
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17	3	5	5	4	4	4	4	5	5
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55	6	4	5	5	5	5	5	4	3	
		4.1636	4.073	3.9074	4.291	4.4727	4.2	4.25	3.685	4.13

BIOGRAPHICAL SKETCH OF STUDENT

Diana Sell Watkins was born in Los Angeles, California. It is unknown at what age she was removed from her birth mother. She was remanded as a ward of the court in the County of Los Angeles. She was moved to several different abusive county foster homes. At the age of 3.5 years, she was adopted by Edwin and Esther Sell, in Whittier, California, along with her natural sister, Patricia Annette. Diana was determined by the County of Los Angeles to be retarded and the County told her adopted mother she was not college material (she had been adopted in the County of Los Angeles as a handicapped special needs child).

After winning a scholarship to Whittier College, and completing baccalaureate studies at UCLA, Diana graduated with a 3.1 GPA from the University of California, at Los Angeles. She married a college sweetheart, and gave birth to two children.

After severe financial and personal troubles, Diana and her family moved to Arkansas, and raised their family there. Diana met Dr. Dale Jordan in 1994. He screened her for learning disabilities, and it was determined at the age of 43 that Diana had never been retarded, but suffered from dyslexia, dysgraphia, Irlen Syndrome, and dyscalculia.

Diana's son, Paul, was also determined to have learning disabilities. Since that day, Diana has devoted herself as a role model to faculty, staff, and students, as an example that the only limits experienced in life are self-imposed.

Diana will start a new career mentoring family practice residents who are starting three years rotations at the University of Arkansas for Medical Sciences. Diana loves hiking, fishing, reading, building and fixing computers, and her relationship with the living Christ.